

Data Report
Routine Monitoring Program for Toxics in Fish:
Passaic River Region

**New Jersey Department of Environmental Protection
Division of Science, Research and Technology**

April 20, 2004

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The data discussed in this report can be found in the appendices on the web at <http://www.state.nj.gov/dep/dsr/monitoring-report.htm>

Data Report

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Passaic River Region

Introduction

This report is a data compilation of the Routine Monitoring Program for Toxics in Fish- Passaic River Region. The report contains an overview of the entire Routine Monitoring Program, a summary of the Passaic River Region program, sampling protocol, chemical analysis and data generated. A final report containing details of the various program components will be generated and available on the NJDEP website. The results of this program will be used to amend existing advisories or, if necessary, develop new advisories and will assist the NJDEP in evaluating trends in contaminant concentrations of these selected species. This first year project establishes the foundation of a routine monitoring network to ensure that data is generated and that advisories can be updated on a regular basis. These data will be reviewed by the inter-agency Toxics in Biota Committee (TIBC) for advisory revision and will provide a tool to assess the status and trends of these contaminants in the state's aquatic systems. Until the TIBC data review and the advisory revisions are complete, the advisories issued in 2003 will continue to be used today.

Background

Fish and shellfish consumption advisories due to toxic chemical contamination were announced in New Jersey in the 1980s and 1990s. Data from Division of Science, Research and Technology (DSRT) studies revealed that unacceptable risks existed for eating certain species of fish and shellfish from certain waters in the State. These advisories particularly apply to pregnant women, nursing mothers and young children because polychlorinated biphenyls (PCBs), dioxin and mercury are known to cause birth defects, developmental problems, neurological problems and/or cancer. However, limited new data has been generated in the past ten years. Therefore, it is not known how appropriate the advisories are today. There is a clear need for a continuous Routine Monitoring Program for Toxics in Fish to regularly assess the status and trends of fish contamination and related consumption advisories in New Jersey waters.

The monitoring program described here builds upon DSRT fish contamination research that; identified widespread mercury contamination in the fresh waters of the state, chlordane, PCB and dioxin contamination in site specific locations and PCB contamination predominantly in several coastal estuarine and marine fish species. The routine monitoring program will focus on collection of those fish species currently under consumption advisories collected from waterways identified with a specified chemical contamination.

The primary objectives of the Routine Monitoring Program are twofold. (1) To provide current and more comprehensive data on concentrations of toxic contaminants in fish and shellfish in order to assess human health risks and thus update/recommend fish consumption advisories, and (2) to provide data to develop environmental indicators to assess the progress of environmental management actions.

Due to the large number of water bodies in the state, the sampling is divided into five broad water regions on a recurrent five-year cycle. These regions (see Figure 1) are generally adapted from the five watershed management regions, recognizing the need to consolidate all estuary/marine areas and consolidation of two Delaware River Basin regions (primarily due to accessibility of sites in contiguous waters). The five regions are:

1. Passaic River Region
2. Marine/Estuarine Coastal Region.
3. Raritan River Region
4. Atlantic Coastal Inland Waterways Region and
5. Upper and Lower Delaware River Region,

The sequence of tasks for the program includes workplan development, sample collection, sample analysis, data assessment, risk assessment, reporting and submission for review and advisory update to the TIBC. The overall responsibility for Routine Monitoring Program is the NJDEP/DSRT. In order to maintain data continuity, the Academy of Natural Sciences, Philadelphia (ANSP) has been contracted for the chemical analysis component of the entire program. The ANSP along with DFW/DSRT staff provided the sample collection and field handling for the program.

The monitoring program design contains representative sampling of targeted fish from the majority of public assessable waterways throughout the state. Sampling site selection within both the freshwater and estuarine/marine components of the monitoring plan includes those lakes, rivers, reservoirs and coastal waterways under the current fish consumption advisories. These sites, derived from previous DSRT/ANSP research were chosen from a listing of publicly owned or assessable waters provided by DFW include specific recreationally important waterways. The statewide coverage of the Fish Monitoring Program incorporates all of these sites, and when possible may be adjusted to include a limited number of specific water bodies not previously sampled.

Routine Monitoring Program - Passaic River Region

For this program the Passaic River Region is defined as that portion of the northeast section of the state that include Passaic, Bergen, Hudson, Essex Counties as well as parts of Morris and Sussex Counties. The sampling regime for the Passaic River Region included a total of 28 waterbodies within Passaic, Pequannock, Pompton, and Hackensack River systems. While statewide fish consumption advisories exist for all waters of the state, there are a total of 22 locations within the Passaic River Region that are listed with waterbody specific fish consumption advisories. Consumption advisories for this region have been issued to due elevated levels of three chemical contaminants (mercury, PCBs or dioxin) in freshwater fish.

Fish sampling for the Passaic River Regions included 22 waterways under the waterbody specific consumption advisories and 6 public waterways not previously sampled. A total 178 fish samples were collected for this sampling program. The list of freshwater fish species sampled includes those fish species under consumption advisories for mercury and/or PCB contamination. PCB advisories exist for fish within the Pompton River and lower Passaic River and dioxin contamination for fish within the tidal Passaic River. These species and locations are the starting point for the design of the Routine Monitoring Program.

Total mercury was analyzed for a variety of freshwater fish species collected in the Passaic River Region. A limited number of PCB (congener specific and calculated total Aroclor) and pesticide analysis (e.g., chlordane, DDX, etc.) were included where appropriate. Monitoring for dioxins/furans at specific stations is also included. All samples were individual specimens of gamefish species representing various aquatic trophic levels. The samples consisted of fillets only tissue. Samples analyzed for OCP, PCBs and dioxin were fillets with skin-on (except catfish and eel) and those analyzed for mercury were fillets with skin-off.

There is a clear need for a continuous Routine Monitoring Program for Toxics in Fish to regularly assess the status and trends of fish contamination and related consumption advisories in New Jersey waters. The results of the Monitoring Program will be coordinated with existing NJDEP sampling networks focused on tracking water quality (National Shellfish Monitoring Program, the Ambient Biomonitoring Network, the Ambient Stream Monitoring Network and the Index of Biotic Integrity, i.e., fish community sampling). The results of this program will be used to amend existing advisories or, if necessary, develop new advisories and will assist the NJDEP in evaluating trends in contaminant concentrations of these selected species. This first year effort establishes the foundation of a routine monitoring network to ensure that data is generated and that advisories can be updated on a regular basis.

FIGURE 1

Routine Monitoring Program Sampling Regions Year 1-5

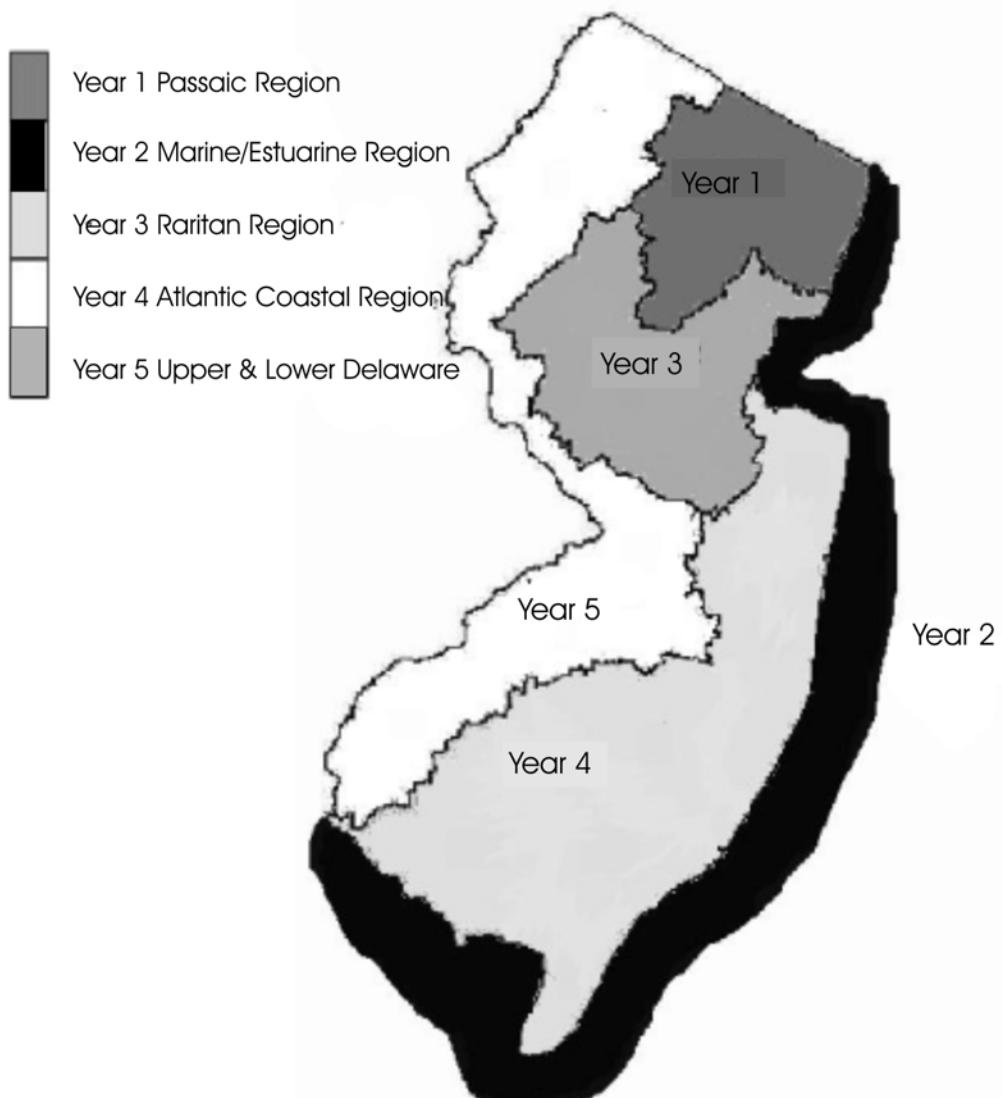


Table 1- Sample Locations, Species Collected and Contaminant Analyzed

Code	Waterbody Sampled	Species- Under 2003 Advisory	Mercury	PCB/OCP	Dioxin/Furans
WWL	Wawayanda Lake	CP	LMB, CP,BSF,YBH,		
CAN	Canistear Reservoir	LMB	LMB,CP,YP,BSF, YBH,		
CL	Clinton Reservoir	LMB	RB,CP,RSF,WS, YBH,		
ORR	Oak Ridge Reservoir	LMB,CP,BBH,YBH	LMB,BSF,YBH,		
EL	Echo Lake Reservoir	LMB	LMB,CP,BSF, YBH,		
GWL	Greenwood Lake	LMB,WP	LMB,WALL,BSF, YBH,		
MV	Monksville Reservoir	LMB,CP,WALL,SMB,WP,SF,BBH	LMB, CP,WALL, BSF,YP,YBH,		
WQ	Wanaque Reservoir	LMB,CP,SMB,WP,WCF,BBH	LMB,BSF,YBH,		
SH	Sheppards Lake		LMB,RB,RSF, BBH,		
GTL	Green Turtle Lake	LMB,WP	LMB,BSF,		
RL	Ramapo Lake		LMB,BSF,		
OPP	Overpeck Creek Lake		LMB,EEL,BSF, BBH,CARP	LMB,EEL,CARP,	
POMP	Pompton Lake	LMB	LMB,BSF,CARP	LMB,CARP,	
RPF	Ramapo River at Pompton feeder	LMB,SMB,RB,BC,SF,BBH,YBH	LMB,SMB,RB, YBH,	LMB,SMB,YBH,	
PLP	Pompton R @ Lincoln Park Rt 202	LMB,PIKE,YP	LMB,RB,BC, CARP	LMB,CARP,	
PER	Passaic R. at Eagle Rock Ave	LMB,SF,BC,CARP,YBH	LMB,PIKE,BC, CARP	LMB,NP,CARP,	
WEE	Lake Weequahic		LMB,WP,BSF, BBH,CARP	LMB,BSF,CARP,	
RWH	Rockaway R.@ Powerville(Hamilton Farm)	LMB,CP,YBH,BBH	RB,BSF,YBH,		
SPL	Split Rock Reservoir		LMB,CP,YP,BSF, BBH,		
BBP	Branch Brook Park		LMB,BSF,CARP	LMB,CARP,	
BTR	Boonton Reservoir	LMB,WCF,BBH	LMB,SMB,RB	LMB,SMB,	
SPE	Speedwell Lake	LMB,SF	CP,BSF,CARP		
ORA	Oradell Reservoir	LMB,CARP,YBH	LMB,EEL,BSF, YBH,		

<u>Code</u>	<u>Waterbody Sampled</u>	<u>Species- Under 2003 Advisory</u>	<u>Mercury</u>	<u>PCB/OCP</u>	<u>Dioxin/Furans</u>
TAP	Lake Tappan	SMB, CARP, YBH	LMB, SMB, BSF,		
PRE	Passaic R @ Elmwood Park	LMB, SF, CARP, BBH	LMB, EEL, BSF, YBH, CARP,	LMB, BSF, YBH, CA RP	
PRDL	Passaic R @ Dundee Lake (Upriver of Dundee Dam)	LMB, SF, CARP, BBH	LMB, EEL, CARP,	LMB, EEL, CARP	LMB, EEL, CARP
PRG	Passaic R @ Garfield downriver of Dundee Dam	All species downriver of Dundee Dam	SB, CCF, EEL, WS, CARP	SB, CCF, EEL, WS, CARP	SB, EEL, CCF, WS, CARP
PRL	Passaic R @ Lyndhurst - Wallington	All species downriver of Dundee Dam	CARP	CARP	
Notes:					
Locations in bold not previously sampled.					
LMB	largemouth bass				
SMB	smallmouth bass				
CP	chain pickerel				
PIKE	northern pike				
WALL	walleye				
SB	striped bass				
RB	rock bass				
BC	black crappie				
YP	yellow perch				
RSF	redbreast sunfish				
BGS	bluegill sunfish				
YBH	yellow bullhead				
BBH	brown bullhead				
CCF	channel catfish				
CARP	common carp				
WS	white sucker				
EEL	American eel				

Table 2. List of Chemical Analytes

POLYCHLORINATED BIPHENYLS		ORGANOCHLORINE PESTICIDES	MERCURY
1	85	opDDE	
3	136	ppDDE	
4+10	77+110	op ddt	
7	82	pp ddt	
6	151	o,p ddd	
8+5	135+144	p,p ddd	
19	107	alpha BHC	
12+13	149	beta BHC	
18	118	delta BHC	
17	131	lindane	
24+27	146	heptaclor	
16+32	153+132+105	heptachlor epoxide	
29	141	oxychlordane	
26	137+176	gamma chlordane	
25	163+138	alpha chlordane	
31+28	158	cis nonachlor	
53+33+21	129+178	trans nonachlor	
22	187+182	dieldrin	
45	183	endrin	
46	128	aldrin	
52	185	endosulfan I	
49	174	endosulfan II	
47	177		
48	202+171		
44	157+200		
37+42	172+197		
41+71	180		
40	193		
100	191		
63	199		
74	170+190		
70+76	201		
66+95	203+196		
91	189		
56+60	208+195		
101	207		
99	194		
83	205		
97	206		
87+81	209		

Table 3. Laboratory Duplicate Analysis of Individual Analytes

CHEM ID	9432F1	9432dupF1	average	percent difference
F-number	F-2481	F-2481		
LIPID PERCENT (%)	5.45	5.51	5.48	1
EXTRACTION MASS (g)	2.057	2.052	2.05	0
SURROGATE RECOVERY (%)				
PCB 14	121	125	123	3
PCB 65	96	100	98	4
PCB 166	98	106	102	8
TOTAL PCBs	347.90	366.16	357.03	5
TOTAL DDXs	86.81	95.60	91.21	10
TOTAL CHLORDANES	115.89	118.63	117.26	2
PCB's	ng/g	ng/g	ng/g	
1	0.321	0.250	0.285	25
3	0.725	1.323	1.024	58
4+10	0.222	0.229	0.226	3
7	0.153	0.144	0.148	6
6	0.313	0.322	0.318	3
8+5	2.936	2.842	2.889	3
19	0.086	0.088	0.087	1
12+13	0.107	0.112	0.110	4
18	2.502	2.472	2.487	1
17	1.387	1.383	1.385	0
24+27	0.225	0.243	0.234	8
16+32	2.336	2.325	2.330	0
29	BDL	BDL	BDL	
26	1.454	1.496	1.475	3
25	0.585	0.554	0.569	5
31+28	14.065	15.175	14.620	8
53+33+21	3.046	3.150	3.098	3
22	5.201	5.470	5.336	5
45	1.437	1.579	1.508	9
46	0.120	0.109	0.115	10
52	8.786	8.890	8.838	1
49	8.372	8.586	8.479	3
47	4.557	5.563	5.060	20
48	1.249	1.010	1.130	21
44	8.441	8.716	8.579	3
37+42	3.388	3.418	3.403	1
41+71	8.777	8.913	8.845	2
40	1.066	1.119	1.093	5
100	0.259	0.274	0.266	6
63	0.848	0.827	0.837	2
74	6.310	6.640	6.475	5
70+76	9.762	10.338	10.050	6

66+95	25.813	26.777	26.295	4
91	1.710	1.819	1.764	6
56+60	8.791	9.208	8.999	5
101	10.114	10.417	10.265	3
99	6.856	7.398	7.127	8
83	0.576	0.561	0.568	3
97	3.425	3.632	3.528	6
87+81	2.890	3.050	2.970	5
85	1.793	1.949	1.871	8
136	0.713	0.717	0.715	1
77+110	14.172	14.803	14.488	4
82	0.801	0.879	0.840	9
151	2.955	3.173	3.064	7
135+144	1.864	1.881	1.872	1
107	1.663	1.780	1.722	7
149	7.064	7.323	7.194	4
118	10.658	11.251	10.955	5
131	0.176	0.179	0.177	1
146	3.392	3.549	3.471	5
153+132+105	27.888	28.983	28.436	4
141	0.813	0.846	0.830	4
137+176	1.088	1.184	1.136	8
163+138	26.319	27.671	26.995	5
158	1.651	1.784	1.718	8
129+178	1.283	1.436	1.360	11
187+182	9.877	10.312	10.095	4
183	3.873	4.126	4.000	6
128	3.765	4.066	3.916	8
185	0.519	0.604	0.561	15
174	2.366	2.545	2.455	7
177	2.844	3.034	2.939	6
202+171	3.363	3.578	3.471	6
157+200	1.186	1.244	1.215	5
172+197	1.391	1.485	1.438	7
180	15.283	16.765	16.024	9
193	1.606	1.254	1.430	25
191	0.368	0.351	0.360	5
199	0.184	0.209	0.197	13
170+190	10.763	11.796	11.279	9
201	5.873	6.353	6.113	8
203+196	7.220	7.695	7.457	6
189	0.725	0.817	0.771	12
208+195	4.854	5.150	5.002	6
207	0.339	0.335	0.337	1
194	3.218	3.534	3.376	9
205	0.160	0.172	0.166	7
206	4.388	4.672	4.530	6
209	0.232	0.253	0.243	9

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	2.691	2.927	2.809	8
ppDDE	32.819	38.280	35.549	15
op ddt	15.646	16.245	15.946	4
pp ddt	BDL	BDL	BDL	
o,p ddd	3.621	4.037	3.829	11
p,p ddd	32.036	34.110	33.073	6
Total DDXs	86.813	95.599	91.206	10
alpha BHC	BDL	BDL	BDL	
beta BHC	1.201	1.016	1.109	17
delta BHC	ND	ND	ND	
lindane	0.570	0.632	0.601	10
heptaclor	1.318	1.778	1.548	30
heptachlor epoxide	6.795	7.480	7.138	10
oxychlordane	7.171	7.881	7.526	9
gamma chlordane	19.362	17.382	18.372	11
alpha chlordane	45.269	44.992	45.131	1
cis nonachlor	4.636	5.014	4.825	8
trans nonachlor	31.340	34.108	32.724	8
Total Chlordanes	115.890	118.635	117.262	2
dieldrin	13.940	14.587	14.264	5
endrin	0.101	0.126	0.113	22
aldrin	1.121	1.435	1.278	25
endosulfan 1	3.311	3.373	3.342	2
endosulfan II	1.474	1.374	1.424	7
average of total OCP's				11

Table 3.Laboratory Duplicate Analysis of Individual Analytes

CHEM ID	9461F1	9461Dup	average	percent difference
F-number	F-2502	F-2502		
LIPID PERCENT (%)	1.25	1.15	1.20	9
EXTRACTION MASS (g)	2.001	2.014	2.008	1
SURROGATE RECOVERY (%)				
PCB 14	101	102	101	0
PCB 65	89	87	88	3
PCB 166	96	95	95	1
TOTAL PCBs	284.82	269.87	277.34	5
TOTAL DDXs	69.46	67.41	68.44	3
TOTAL CHLORDANES	56.87	55.41	56.14	3
PCB's	ng/g	ng/g	ng/g	
1	ND	BDL	BDL	
3	0.726	0.430	0.578	51
4+10	BDL	BDL	BDL	
7	BDL	BDL	BDL	
6	0.033	0.031	0.032	6
8+5	0.475	0.456	0.465	4
19	0.113	0.238	0.175	71
12+13	0.197	0.139	0.168	34
18	0.413	0.460	0.436	11
17	0.817	0.857	0.837	5
24+27	BDL	0.168	0.168	
16+32	1.536	1.561	1.549	2
29	BDL	BDL	BDL	
26	0.500	0.514	0.507	3
25	BDL	BDL	BDL	
31+28	4.732	4.505	4.618	5
53+33+21	0.991	1.084	1.037	9
22	1.760	1.786	1.773	1
45	0.276	0.274	0.275	1
46	0.198	0.266	0.232	29
52	0.579	0.598	0.589	3
49	5.783	5.411	5.597	7
47	6.981	6.434	6.708	8
48	1.252	1.045	1.149	18
44	4.953	4.514	4.734	9
37+42	3.793	3.518	3.655	8
41+71	9.761	8.990	9.376	8
40	0.660	0.597	0.628	10
100	0.612	0.679	0.646	10
63	0.641	0.667	0.654	4
74	6.475	6.034	6.254	7
70+76	8.548	7.964	8.256	7
66+95	19.796	18.581	19.188	6

91	1.553	1.530	1.541	2
56+60	9.028	8.363	8.695	8
101	6.516	6.050	6.283	7
99	6.416	6.452	6.434	1
83	0.248	0.209	0.229	17
97	3.077	2.820	2.949	9
87+81	2.319	2.141	2.230	8
85	3.876	3.579	3.728	8
136	0.398	0.376	0.387	6
77+110	15.862	14.613	15.237	8
82	0.985	0.900	0.943	9
151	1.968	1.758	1.863	11
135+144	1.333	1.195	1.264	11
107	1.446	1.312	1.379	10
149	6.468	6.200	6.334	4
118	11.369	10.926	11.147	4
131	0.056	0.058	0.057	5
146	4.007	3.782	3.894	6
153+132+105	29.205	27.821	28.513	5
141	0.536	0.606	0.571	12
137+176	0.774	0.782	0.778	1
163+138	24.969	23.686	24.327	5
158	1.536	1.504	1.520	2
129+178	1.066	1.557	1.312	37
187+182	7.261	6.827	7.044	6
183	3.600	3.370	3.485	7
128	2.558	2.395	2.477	7
185	0.381	0.406	0.394	6
174	1.643	1.623	1.633	1
177	1.506	1.514	1.510	1
202+171	1.460	1.447	1.454	1
157+200	1.137	1.117	1.127	2
172+197	3.965	3.797	3.881	4
180	16.025	15.492	15.758	3
193	3.491	3.064	3.277	13
191	0.669	0.466	0.567	36
199	0.096	0.096	0.096	0
170+190	8.761	8.247	8.504	6
201	3.340	3.097	3.219	8
203+196	4.604	4.211	4.408	9
189	0.636	0.690	0.663	8
208+195	2.373	2.409	2.391	2
207	0.134	0.178	0.156	28
194	1.698	1.549	1.623	9
205	0.132	0.143	0.138	8
206	1.670	1.640	1.655	2
209	0.074	0.070	0.072	5

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	1.925	1.894	1.910	2
ppDDE	42.891	41.493	42.192	3
op ddt	8.079	7.905	7.992	2
pp ddt	1.004	0.933	0.969	7
o,p ddd	1.745	1.728	1.737	1
p,p ddd	13.811	13.461	13.636	3
Total DDXs	69.456	67.415	68.436	3
alpha BHC	BDL	BDL	BDL	
beta BHC	BDL	BDL	BDL	
delta BHC	BDL	BDL	BDL	
lindane	0.182	0.151	0.166	18
heptaclor	4.049	4.386	4.218	8
heptachlor epoxide	1.552	1.495	1.523	4
oxychlordane	3.527	3.512	3.519	0
gamma chlordane	3.951	3.876	3.914	2
alpha chlordane	11.498	11.562	11.530	1
cis nonachlor	7.055	6.455	6.755	9
trans nonachlor	25.237	24.126	24.681	5
Total Chlordanes	56.868	55.412	56.140	3
dieldrin	3.870	3.634	3.752	6
endrin	BDL	BDL	BDL	
aldrin	BDL	BDL	BDL	
endosulfan I	3.061	2.829	2.945	8
endosulfan II	0.428	0.355	0.391	18
average of total OCP's				6

Table 3.Laboratory Duplicate Analysis of Individual Analytes

CHEM ID	9471F1	9471DupF1	average	percent difference
F-number	F-2512	F-2512		
LIPID PERCENT (%)	0.77	0.63	0.70	19
EXTRACTION MASS (g)	2.016	2.002	2.009	1
SURROGATE RECOVERY (%)				
PCB 14	111	117	114	5
PCB 65	80	89	84	11
PCB 166	93	102	98	9
TOTAL PCBs	69.20	72.23	70.72	4
TOTAL DDXs	19.05	19.11	19.08	0
TOTAL CHLORDANES	20.63	20.91	20.77	1
PCB's	ng/g	ng/g	ng/g	
1	BDL	BDL	BDL	
3	0.382	0.354	0.368	8
4+10	BDL	BDL	BDL	
7	BDL	BDL	BDL	
6	0.278	BDL	BDL	
8+5	0.292	0.282	0.287	4
19	0.039	0.045	0.042	14
12+13	0.143	0.024	0.084	143
18	0.472	0.416	0.444	13
17	0.239	0.286	0.263	18
24+27	0.262	BDL	BDL	
16+32	0.427	0.510	0.468	18
29	BDL	BDL	BDL	
26	0.191	0.224	0.207	16
25	0.425	0.351	0.388	19
31+28	1.730	1.827	1.779	5
53+33+21	0.359	0.678	0.519	62
22	0.875	0.916	0.895	5
45	0.102	0.119	0.111	16
46	0.051	0.058	0.055	12
52	1.652	1.754	1.703	6
49	1.248	1.383	1.315	10
47	1.270	1.388	1.329	9
48	0.868	BDL	BDL	
44	1.155	1.255	1.205	8
37+42	0.732	0.762	0.747	4
41+71	1.734	1.891	1.813	9
40	0.163	0.162	0.162	0
100	0.088	0.119	0.103	30
63	0.130	0.165	0.147	24
74	1.092	1.238	1.165	12
70+76	1.687	1.868	1.777	10

66+95	5.203	5.506	5.354	6
91	0.392	0.332	0.362	17
56+60	1.766	1.938	1.852	9
101	2.224	2.438	2.331	9
99	1.618	1.582	1.600	2
83	0.082	0.084	0.083	3
97	0.645	0.698	0.672	8
87+81	0.528	0.593	0.560	12
85	0.867	0.905	0.886	4
136	0.106	0.117	0.111	10
77+110	3.377	3.672	3.524	8
82	0.211	0.230	0.220	9
151	0.570	0.640	0.605	11
135+144	0.344	0.385	0.365	11
107	0.238	0.256	0.247	7
149	1.876	1.984	1.930	6
118	2.603	2.775	2.689	6
131	0.021	0.021	0.021	0
146	0.844	0.902	0.873	7
153+132+105	6.955	7.293	7.124	5
141	0.119	0.104	0.111	14
137+176	0.220	0.201	0.211	9
163+138	5.870	6.249	6.059	6
158	0.941	0.990	0.965	5
129+178	0.234	0.273	0.253	15
187+182	1.857	1.931	1.894	4
183	0.780	0.841	0.811	7
128	0.696	0.751	0.724	8
185	0.098	0.113	0.105	15
174	0.474	0.510	0.492	7
177	0.406	0.421	0.414	4
202+171	0.368	0.382	0.375	4
157+200	0.245	0.268	0.256	9
172+197	0.227	0.245	0.236	8
180	2.580	2.707	2.644	5
193	0.191	BDL	BDL	
191	0.047	0.057	0.052	18
199	0.013	0.016	0.015	17
170+190	1.733	1.959	1.846	12
201	0.827	0.866	0.847	5
203+196	1.035	1.144	1.089	10
189	0.109	0.138	0.124	24
208+195	0.591	0.635	0.613	7
207	0.025	0.029	0.027	13
194	0.472	0.452	0.462	4
205	0.029	0.035	0.032	20
206	0.437	0.467	0.452	7
209	0.021	0.022	0.022	7

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	0.565	0.547	0.556	3
ppDDE	5.431	6.323	5.877	15
op ddt	5.840	5.382	5.611	8
pp ddt	0.654	0.644	0.649	2
o,p ddd	0.962	1.040	1.001	8
p,p ddd	5.601	5.171	5.386	8
Total DDXs	19.053	19.107	19.080	0
alpha BHC	ND	ND	ND	
beta BHC	1.154	0.778	0.966	39
delta BHC	0.279	BDL	BDL	
lindane	0.229	BDL	BDL	
heptachlor	0.394	0.478	0.436	19
heptachlor epoxide	1.663	1.595	1.629	4
oxychlordane	3.138	2.852	2.995	10
gamma chlordane	2.129	2.407	2.268	12
alpha chlordane	5.747	5.888	5.817	2
cis nonachlor	0.812	0.719	0.766	12
trans nonachlor	6.749	6.971	6.860	3
Total Chlordanes	20.633	20.911	20.772	1
dieldrin	2.162	2.021	2.091	7
endrin	0.193	BDL	BDL	
aldrin	BDL	BDL	BDL	
endosulfan I	3.326	3.377	3.351	2
endosulfan II	0.663	0.632	0.648	5
average of total OCP's				9

CHEM ID	9543R F1	9543dup F1	average	percent difference
F-number	F-2522	F-2522		
LIPID PERCENT (%)	4.93	5.29	5.11	7
EXTRACTION MASS (g)	2.106	2.026	2.066	4
SURROGATE RECOVERY (%)				
PCB 14	134	122	128	9
PCB 65	86	78	82	9
PCB 166	116	104	110	11
TOTAL PCBs	1274.96	1245.28	1260.12	2
TOTAL DDXs	275.88	279.53	277.70	1
TOTAL CHLORDANES	119.42	127.80	123.61	7

PCB's	ng/g	ng/g	ng/g	
1	0.320	0.509	0.414	46
3	1.000	2.298	1.649	79
4+10	0.424	0.394	0.409	7
7	0.138	0.115	0.127	18
6	0.464	0.435	0.449	6
8+5	5.159	5.080	5.119	2
19	0.357	0.373	0.365	4
12+13	ND	0.069	ND	
18	11.824	11.343	11.583	4
17	6.584	6.260	6.422	5
24+27	1.006	0.983	0.995	2
16+32	13.264	12.863	13.063	3
29	BDL	BDL	BDL	
26	4.774	4.458	4.616	7
25	1.997	1.673	1.835	18
31+28	48.764	44.429	46.597	9
53+33+21	13.737	13.100	13.419	5
22	15.603	15.063	15.333	4
45	2.797	2.511	2.654	11
46	0.374	0.383	0.378	2
52	28.510	27.127	27.819	5
49	29.029	28.560	28.795	2
47	22.563	24.913	23.738	10
48	6.926	4.900	5.913	34
44	33.257	31.801	32.529	4
37+42	16.948	15.971	16.460	6
41+71	42.385	40.765	41.575	4
40	6.121	6.390	6.255	4
100	1.196	1.264	1.230	5
63	2.755	2.542	2.648	8

74	27.065	26.064	26.564	4
70+76	31.381	30.284	30.833	4
66+95	97.950	94.080	96.015	4
91	5.555	5.301	5.428	5
56+60	39.435	38.840	39.138	2
101	31.424	29.620	30.522	6
99	21.173	20.930	21.051	1
83	1.977	1.942	1.960	2
97	10.571	10.054	10.313	5
87+81	ND	7.205	ND	
85	9.398	9.256	9.327	2
136	2.492	2.362	2.427	5
77+110	47.550	45.715	46.633	4
82	3.803	4.019	3.911	6
151	10.804	10.256	10.530	5
135+144	6.327	6.287	6.307	1
107	4.276	4.382	4.329	2
149	29.026	28.130	28.578	3
118	35.912	35.156	35.534	2
131	0.373	0.391	0.382	5
146	13.604	13.233	13.418	3
153+132+105	103.181	99.831	101.506	3
141	3.380	3.187	3.284	6
137+176	3.282	3.258	3.270	1
163+138	83.629	81.287	82.458	3
158	11.869	12.165	12.017	2
129+178	4.852	5.052	4.952	4
187+182	38.770	37.764	38.267	3
183	16.650	16.459	16.555	1
128	8.275	8.466	8.371	2
185	2.530	2.444	2.487	3
174	12.604	12.330	12.467	2
177	9.435	8.996	9.215	5
202+171	11.315	11.065	11.190	2
157+200	4.133	3.818	3.975	8
172+197	4.730	4.494	4.612	5
180	67.352	67.963	67.657	1
193	5.490	5.733	5.611	4
191	0.999	1.011	1.005	1
199	0.806	0.824	0.815	2
170+190	44.544	43.038	43.791	3
201	18.975	18.106	18.540	5
203+196	26.682	25.907	26.295	3
189	2.527	2.716	2.621	7
208+195	15.234	14.651	14.942	4

207	0.578	0.624	0.601	8
194	13.734	13.187	13.460	4
205	0.473	0.500	0.486	6
206	10.195	9.995	10.095	2
209	0.361	0.332	0.347	8

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	10.457	10.649	10.553	2
ppDDE	166.719	163.616	165.167	2
op ddt	18.368	20.001	19.184	9
pp ddt	1.197	1.118	1.157	7
o,p ddd	18.937	21.566	20.252	13
p,p ddd	60.203	62.576	61.389	4
Total DDXs	275.881	279.526	277.703	1
alpha BHC	0.222	0.398	0.310	57
beta BHC	4.686	4.514	4.600	4
delta BHC	0.354	0.290	0.322	20
lindane	0.353	0.412	0.383	15
heptachlor	10.759	10.270	10.515	5
heptachlor epoxide	NQ	NQ	NQ	
oxychlordane	NQ	NQ	NQ	
gamma chlordane	30.393	32.042	31.217	5
alpha chlordane	40.192	45.960	43.076	13
cis nonachlor	8.870	9.492	9.181	7
trans nonachlor	29.209	30.035	29.622	3
Total Chlordanes	119.422	127.799	123.610	7
dieldrin	11.968	13.620	12.794	13
endrin	0.424	0.584	0.504	32
aldrin	BDL	BDL	BDL	
endosulfan I	2.570	2.975	2.773	15
endosulfan II	0.911	0.618	0.764	38
average of total OCP's				14

CHEM ID	9544-F1	9544dup-F1	average	percent difference
F-number	F-2523	F-2523		
LIPID PERCENT (%)	3.89	3.90	3.89	0
EXTRACTION MASS (g)	1.994	1.958	1.976	2
SURROGATE RECOVERY (%)				
PCB 14	111	112	112	1
PCB 65	93	93	93	0
PCB 166	100	98	99	2
TOTAL PCBs	880.81	867.60	874.21	2
TOTAL DDXs	177.56	182.41	179.99	3
TOTAL CHLORDANES	211.01	219.15	215.08	4

PCB's	ng/g	ng/g	ng/g	
1	0.220	0.322	0.271	38
3	1.197	0.843	1.020	35
4+10	0.321	0.319	0.320	1
7	0.070	0.063	0.067	11
6	0.170	0.197	0.183	15
8+5	2.642	2.477	2.560	6
19	0.347	0.319	0.333	8
12+13	0.149	0.083	0.116	57
18	7.321	7.448	7.384	2
17	3.627	3.493	3.560	4
24+27	0.490	0.581	0.535	17
16+32	8.030	7.803	7.916	3
29	BDL	BDL	BDL	
26	2.784	2.697	2.740	3
25	0.778	0.901	0.839	15
31+28	23.003	21.793	22.398	5
53+33+21	7.482	4.488	5.985	50
22	10.641	10.311	10.476	3
45	5.528	7.109	6.318	25
46	0.404	0.332	0.368	20
52	21.009	21.148	21.078	1
49	19.812	20.529	20.170	4
47	ND	6.029	ND	
48	5.997	4.690	5.343	24
44	24.920	24.894	24.907	0
37+42	11.651	12.089	11.870	4
41+71	27.581	27.901	27.741	1
40	4.797	4.581	4.689	5
100	2.190	1.774	1.982	21
63	1.922	1.937	1.930	1
74	15.308	15.584	15.446	2
70+76	18.748	19.221	18.985	2
66+95	64.034	65.292	64.663	2
91	5.121	5.028	5.075	2
56+60	30.349	29.439	29.894	3
101	21.332	21.411	21.372	0

99	13.117	13.868	13.493	6
83	1.530	1.534	1.532	0
97	7.703	7.684	7.694	0
87+81	5.588	5.487	5.538	2
85	32.166	18.318	25.242	55
136	1.755	1.815	1.785	3
77+110	36.517	36.659	36.588	0
82	2.709	2.663	2.686	2
151	7.505	7.496	7.500	0
135+144	4.686	4.727	4.707	1
107	2.693	2.810	2.751	4
149	22.277	22.561	22.419	1
118	22.873	22.928	22.901	0
131	0.485	0.458	0.472	6
146	9.378	9.555	9.466	2
153+132+105	67.299	67.596	67.447	0
141	2.603	2.633	2.618	1
137+176	0.544	0.754	0.649	32
163+138	58.380	58.253	58.316	0
158	8.322	7.985	8.154	4
129+178	1.798	3.339	2.568	60
187+182	24.856	24.422	24.639	2
183	11.362	11.021	11.192	3
128	8.181	7.690	7.936	6
185	1.873	1.736	1.805	8
174	9.473	9.556	9.515	1
177	6.610	6.661	6.636	1
202+171	8.294	8.298	8.296	0
157+200	2.760	2.801	2.780	1
172+197	3.538	3.552	3.545	0
180	41.138	39.581	40.360	4
193	4.119	4.780	4.449	15
191	1.102	0.955	1.028	14
199	0.667	0.616	0.642	8
170+190	28.659	27.882	28.270	3
201	14.195	13.983	14.089	2
203+196	19.487	19.046	19.267	2
189	1.832	1.747	1.789	5
208+195	12.119	11.575	11.847	5
207	0.858	0.737	0.797	15
194	8.985	8.448	8.717	6
205	0.628	0.495	0.562	24
206	9.905	9.516	9.711	4
209	0.266	0.253	0.259	5

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g
opDDE	ND	ND	ND
ppDDE	43.098	47.939	45.519
op ddt	31.837	32.220	32.029

pp ddt	1.124	1.568	1.346	33
o,p ddd	17.172	16.816	16.994	2
p,p ddd	84.334	83.868	84.101	1
Total DDXs	177.565	182.411	179.988	3
alpha BHC	BDL	BDL	BDL	
beta BHC	1.951	1.906	1.928	2
delta BHC	BDL	BDL	BDL	
lindane	0.215	0.245	0.230	13
heptachlor	5.384	5.646	5.515	5
heptachlor epoxide	6.949	6.860	6.904	1
oxychlordane	7.291	7.403	7.347	2
gamma chlordane	42.393	42.576	42.485	0
alpha chlordane	66.885	76.597	71.741	14
cis nonachlor	8.040	7.911	7.975	2
trans nonachlor	74.068	72.155	73.112	3
Total Chlordanes	211.010	219.149	215.080	4
dieldrin	15.918	15.397	15.658	3
endrin	0.337	0.406	0.372	19
aldrin	0.362	0.362	0.362	0
endosulfan 1	1.836	1.662	1.749	10
endosulfan II	1.812	1.857	1.834	2
average of total OCP's				6

CHEM ID	0238-F1	0238dup-F1	average	percent difference
F-number	F-2402	F-2402		
LIPID PERCENT (%)	0.97	0.80	0.89	19
EXTRACTION MASS (g)	2.016	2.070	2.043	3
SURROGATE RECOVERY (%)				
PCB 14	95	107	101	11
PCB 65	90	96	93	7
PCB 166	94	100	97	6
TOTAL PCBs	47.49	46.74	47.11	2
TOTAL DDXs	5.18	4.66	4.92	11
TOTAL CHLORDANES	8.24	7.97	8.10	3

PCB's	ng/g	ng/g	ng/g
1	BDL	BDL	BDL
3	1.155	BDL	BDL
4+10	BDL	BDL	BDL
7	BDL	BDL	BDL
6	0.029	BDL	BDL
8+5	0.151	0.140	0.146
19	BDL	0.030	BDL
12+13	0.139	0.064	0.101
18	BDL	BDL	BDL
17	0.090	0.029	0.059
24+27	BDL	BDL	BDL
16+32	BDL	BDL	BDL
29	BDL	BDL	BDL
26	0.022	0.031	0.027
25	BDL	BDL	BDL
31+28	0.327	0.322	0.325
53+33+21	0.088	0.091	0.089
22	0.225	0.253	0.239
45	0.032	0.029	0.030
46	0.035	0.031	0.033
52	0.664	0.678	0.671
49	0.525	0.556	0.540
47	BDL	BDL	BDL
48	BDL	0.327	BDL
44	0.322	0.333	0.328
37+42	0.257	0.269	0.263
41+71	0.659	0.601	0.630
40	0.072	0.067	0.069
100	0.110	0.118	0.114
63	0.072	0.075	0.074
74	0.705	0.666	0.686
70+76	0.608	0.619	0.613
66+95	2.527	2.528	2.527
91	0.203	0.208	0.206
56+60	0.737	0.755	0.746
101	1.724	1.743	1.733

99	1.202	1.194	1.198	1
83	0.061	0.062	0.061	3
97	0.457	0.476	0.466	4
87+81	0.362	0.379	0.371	5
85	1.378	1.418	1.398	3
136	0.031	0.040	0.036	25
77+110	1.953	1.893	1.923	3
82	0.097	0.112	0.105	15
151	0.346	0.390	0.368	12
135+144	0.085	0.138	0.112	47
107	0.218	0.227	0.222	4
149	1.570	1.551	1.561	1
118	2.030	2.045	2.037	1
131	0.043	0.032	0.038	28
146	0.902	0.945	0.923	5
153+132+105	6.312	6.289	6.301	0
141	0.074	0.058	0.066	25
137+176	BDL	BDL	BDL	
163+138	5.174	5.154	5.164	0
158	0.698	0.648	0.673	7
129+178	0.180	0.206	0.193	13
187+182	1.381	1.357	1.369	2
183	0.627	0.588	0.607	6
128	0.833	0.808	0.820	3
185	0.080	0.072	0.076	10
174	0.360	0.346	0.353	4
177	0.285	0.275	0.280	3
202+171	0.360	0.341	0.350	5
157+200	0.181	0.171	0.176	5
172+197	0.222	0.213	0.217	4
180	1.790	1.717	1.754	4
193	3.106	3.308	3.207	6
191	0.047	0.041	0.044	12
199	BDL	BDL	BDL	
170+190	1.233	1.293	1.263	5
201	0.564	0.551	0.557	2
203+196	0.688	0.690	0.689	0
189	0.091	0.105	0.098	15
208+195	0.386	0.445	0.415	14
207	0.030	0.060	0.045	66
194	0.242	0.237	0.240	2
205	0.042	0.018	0.030	80
206	0.270	0.260	0.265	4
209	0.014	0.015	0.014	9

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g
opDDE	ND	ND	ND
ppDDE	1.356	1.181	1.268
op ddt	3.068	2.762	2.915

pp ddt	BDL	BDL	BDL	
o,p ddd	BDL	BDL	BDL	
p,p ddd	0.758	0.713	0.736	6
Total DDXs	5.182	4.656	4.919	11
alpha BHC	BDL	BDL	BDL	
beta BHC	0.533	0.471	0.502	12
delta BHC	BDL	BDL	BDL	
lindane	BDL	BDL	BDL	
heptachlor	BDL	0.113	BDL	
heptachlor epoxide	0.200	0.195	0.197	3
oxychlordane	0.988	0.901	0.945	9
gamma chlordane	BDL	BDL	BDL	
alpha chlordane	0.510	0.459	0.485	11
cis nonachlor	0.786	0.729	0.758	8
trans nonachlor	5.753	5.572	5.662	3
Total Chlordanes	8.238	7.969	8.103	3
dieldrin	0.064	0.034	0.049	61
endrin	BDL	BDL	BDL	
aldrin	BDL	BDL	BDL	
endosulfan 1	0.378	0.339	0.358	11
endosulfan II	0.207	0.185	0.196	11
average of total OCP's				13

CHEM ID	0248-F1	0248dup-F1	average	percent difference
F-number	F-2412	F-2412		
LIPID PERCENT (%)	0.40	0.30	0.35	31
EXTRACTION MASS (g)	2.007	2.059	2.033	3
SURROGATE RECOVERY (%)				
PCB 14	75	95	85	23
PCB 65	69	88	79	24
PCB 166	68	87	78	24
TOTAL PCBs	36.50	34.38	35.44	6
TOTAL DDXs	24.35	48.20	36.27	66
TOTAL CHLORDANES	13.97	12.72	13.35	9

PCB's	ng/g	ng/g	ng/g	
1	BDL	BDL	BDL	
3	BDL	BDL	BDL	
4+10	BDL	0.089	BDL	
7	BDL	BDL	BDL	
6	BDL	BDL	BDL	
8+5	0.549	0.536	0.543	2
19	0.039	BDL	BDL	
12+13	BDL	ND	BDL	
18	0.173	0.196	0.185	13
17	0.114	0.112	0.113	2
24+27	BDL	0.165	BDL	
16+32	0.193	0.187	0.190	3
29	BDL	BDL	BDL	
26	0.078	0.069	0.073	12
25	BDL	BDL	BDL	
31+28	0.514	0.457	0.486	12
53+33+21	0.106	0.161	0.134	41
22	0.463	0.516	0.490	11
45	0.085	0.095	0.090	11
46	0.066	0.070	0.068	5
52	0.831	0.757	0.794	9
49	0.776	0.728	0.752	6
47	BDL	BDL	BDL	
48	BDL	0.244	BDL	
44	0.581	0.592	0.586	2
37+42	0.359	0.373	0.366	4
41+71	0.456	0.446	0.451	2
40	0.119	0.112	0.115	6
100	0.042	0.038	0.040	10
63	0.064	0.053	0.059	19
74	0.536	0.506	0.521	6
70+76	0.718	0.651	0.684	10
66+95	2.496	2.484	2.490	0
91	0.300	0.272	0.286	10
56+60	1.330	1.247	1.288	6
101	1.397	1.254	1.325	11

99	0.863	0.829	0.846	4
83	0.227	0.194	0.211	16
97	0.416	0.363	0.390	14
87+81	0.771	0.797	0.784	3
85	0.507	0.448	0.477	12
136	0.068	0.065	0.066	5
77+110	1.821	1.653	1.737	10
82	0.121	0.124	0.123	2
151	0.374	0.336	0.355	11
135+144	0.232	0.212	0.222	9
107	0.156	0.148	0.152	5
149	1.360	1.218	1.289	11
118	1.377	1.206	1.291	13
131	0.022	0.023	0.022	3
146	0.541	0.472	0.506	14
153+132+105	4.049	3.625	3.837	11
141	0.054	0.055	0.054	2
137+176	0.094	0.141	0.117	41
163+138	3.210	2.912	3.061	10
158	0.468	0.486	0.477	4
129+178	0.114	0.139	0.127	20
187+182	0.987	0.914	0.950	8
183	0.447	0.420	0.434	6
128	0.411	0.394	0.403	4
185	0.064	0.060	0.062	5
174	0.265	0.250	0.258	6
177	0.205	0.178	0.191	15
202+171	0.242	0.207	0.225	16
157+200	ND	ND	ND	
172+197	0.101	0.140	0.121	32
180	1.237	1.052	1.144	16
193	BDL	BDL	BDL	
191	0.042	BDL	BDL	
199	0.024	0.013	0.018	62
170+190	0.921	0.835	0.878	10
201	0.529	0.474	0.501	11
203+196	0.663	0.589	0.626	12
189	0.074	0.077	0.075	4
208+195	0.355	0.330	0.342	7
207	0.035	0.021	0.028	50
194	0.232	0.180	0.206	25
205	0.014	BDL	BDL	
206	0.290	0.280	0.285	4
209	0.136	0.113	0.124	18

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	0.909	0.906	0.907	0
ppDDE	7.941	7.445	7.693	6
op ddt	10.553	26.796	18.674	87

pp ddt	0.732	2.011	1.372	93
o,p ddd	0.751	0.697	0.724	7
p,p ddd	3.464	10.343	6.904	100
Total DDXs	24.349	48.198	36.273	66
alpha BHC	0.579	0.581	0.580	0
beta BHC	0.206	0.225	0.216	9
delta BHC	BDL	0.523	BDL	
lindane	0.491	0.680	0.585	32
heptachlor	0.366	0.356	0.361	3
heptachlor epoxide	1.278	1.288	1.283	1
oxychlordane	1.625	1.426	1.526	13
gamma chlordane	1.374	1.241	1.307	10
alpha chlordane	3.337	2.542	2.939	27
cis nonachlor	ND	0.339	BDL	
trans nonachlor	5.991	5.529	5.760	8
Total Chlordanes	13.971	12.721	13.346	9
dieldrin	0.632	0.578	0.605	9
endrin	BDL	4.903	BDL	
aldrin	BDL	BDL	BDL	
endosulfan 1	2.219	1.873	2.046	17
endosulfan II	0.362	4.627	2.494	171
average of total OCP's				33

CHEM ID	0257-F1	0257dup-F1	average	percent difference
F-number	F-2421	F-2421		
LIPID PERCENT (%)	1.55	1.57	1.56	1
EXTRACTION MASS (g)	2.058	2.568	2.313	22
SURROGATE RECOVERY (%)				
PCB 14	105	104	104	1
PCB 65	99	96	98	3
PCB 166	96	95	96	1
TOTAL PCBs	704.66	708.31	706.48	1
TOTAL DDXs	201.16	206.32	203.74	3
TOTAL CHLORDANES	138.80	141.97	140.38	2

PCB's	ng/g	ng/g	ng/g
1	BDL	BDL	BDL
3	BDL	0.250	BDL
4+10	0.394	0.410	0.402
7	0.051	0.044	0.048
6	0.252	0.256	0.254
8+5	2.085	2.108	2.097
19	0.736	0.750	0.743
12+13	BDL	0.014	BDL
18	3.751	3.802	3.777
17	3.794	3.840	3.817
24+27	1.125	1.156	1.140
16+32	6.018	6.153	6.085
29	BDL	ND	BDL
26	3.112	3.139	3.125
25	2.082	2.159	2.121
31+28	20.403	21.174	20.789
53+33+21	2.802	3.358	3.080
22	7.350	7.738	7.544
45	1.522	1.482	1.502
46	0.989	1.011	1.000
52	19.994	19.976	19.985
49	19.605	19.657	19.631
47	32.724	33.004	32.864
48	3.010	2.810	2.910
44	16.495	16.853	16.674
37+42	9.592	9.856	9.724
41+71	12.267	12.546	12.406
40	3.387	3.630	3.509
100	5.119	5.204	5.162
63	1.858	1.786	1.822
74	12.354	12.748	12.551
70+76	22.631	22.848	22.740
66+95	58.219	58.872	58.545
91	4.538	4.415	4.477
56+60	18.375	18.496	18.435
101	21.582	21.469	21.526
99	12.560	12.837	12.699
83	1.167	1.162	1.165
97	6.427	6.307	6.367
87+81	10.578	10.449	10.513
85	6.686	6.757	6.722
136	2.117	2.076	2.097

77+110	31.778	31.884	31.831	0
82	2.278	2.299	2.289	1
151	10.027	10.011	10.019	0
135+144	5.442	5.406	5.424	1
107	4.015	3.981	3.998	1
149	16.311	16.254	16.283	0
118	14.363	14.449	14.406	1
131	0.302	0.290	0.296	4
146	7.018	6.988	7.003	0
153+132+105	50.573	50.578	50.575	0
141	1.988	1.960	1.974	1
137+176	2.031	1.990	2.010	2
163+138	39.278	39.517	39.398	1
158	6.724	6.739	6.731	0
129+178	4.022	4.004	4.013	0
187+182	13.473	13.379	13.426	1
183	8.896	8.856	8.876	0
128	5.759	5.856	5.807	2
185	1.592	1.347	1.469	17
174	7.007	6.940	6.973	1
177	4.440	4.389	4.415	1
202+171	5.687	5.696	5.692	0
157+200	2.061	1.391	1.726	39
172+197	4.153	3.956	4.055	5
180	32.447	31.708	32.078	2
193	3.891	4.030	3.960	4
191	0.989	0.849	0.919	15
199	0.098	0.083	0.090	17
170+190	20.450	20.867	20.658	2
201	9.218	9.173	9.195	0
203+196	12.641	13.009	12.825	3
189	0.147	0.112	0.129	27
208+195	6.917	6.729	6.823	3
207	0.431	0.363	0.397	17
194	5.546	5.591	5.569	1
205	0.329	0.276	0.302	18
206	4.107	4.316	4.212	5
209	0.472	0.447	0.459	6

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	11.182	11.632	11.407	4
ppDDE	113.327	116.201	114.764	3
op ddt	26.741	28.026	27.384	5
pp ddt	1.175	0.933	1.054	23
o,p ddd	7.526	6.953	7.239	8
p,p ddd	41.208	42.577	41.892	3
Total DDXs	201.160	206.322	203.741	3
alpha BHC	0.301	0.180	0.241	50
beta BHC	BDL	BDL	BDL	
delta BHC	0.147	0.143	0.145	3
lindane	0.445	0.503	0.474	12
heptaclor	17.446	17.871	17.658	2
heptachlor epoxide	5.240	4.969	5.104	5

oxychlordane	7.421	7.175	7.298	3
gamma chlordane	12.004	12.287	12.145	2
alpha chlordane	32.505	32.129	32.317	1
cis nonachlor	4.212	4.312	4.262	2
trans nonachlor	59.972	63.223	61.598	5
Total Chlordanes	138.800	141.967	140.383	2
dieldrin	2.506	2.348	2.427	7
endrin	BDL	0.127	BDL	
aldrin	0.477	0.407	0.442	16
endosulfan I	0.382	0.389	0.385	2
endosulfan II	1.541	1.536	1.539	0
 average of total OCP's				8

CHEM ID	0378-F1	0378dup-F1	average	percent difference
F-number	F-2068	F-2068		
LIPID PERCENT (%)	3.57	3.53	3.55	1
EXTRACTION MASS (g)	2.01	2.009	2.010	0
SURROGATE RECOVERY (%)				
PCB 14	103	106	104	3
PCB 65	100	99	99	0
PCB 166	95	97	96	2
TOTAL PCBs	138.59	140.94	139.76	2
TOTAL DDXs	41.54	43.16	42.35	4
TOTAL CHLORDANES	35.59	35.97	35.78	1

PCB's	ng/g	ng/g	ng/g	
1	ND	ND	ND	
3	ND	BDL	BDL	
4+10	BDL	BDL	BDL	
7	ND	ND	ND	
6	0.056	ND	BDL	
8+5	0.218	0.265	0.242	20
19	0.047	ND	BDL	
12+13	0.058	BDL	BDL	
18	0.255	0.198	0.227	25
17	0.092	0.067	0.080	32
24+27	BDL	BDL	BDL	
16+32	0.268	0.237	0.253	12
29	BDL	BDL	BDL	
26	0.134	0.130	0.132	3
25	BDL	BDL	BDL	
31+28	3.892	4.074	3.983	5
53+33+21	0.660	0.571	0.615	15
22	1.941	1.915	1.928	1
45	0.170	0.171	0.171	1
46	0.049	0.022	0.035	77
52	4.572	4.719	4.645	3
49	3.471	3.690	3.581	6
47	BDL	BDL	BDL	
48	0.260	0.308	0.284	17
44	3.758	4.031	3.894	7
37+42	0.982	1.158	1.070	16
41+71	2.014	2.091	2.052	4
40	0.531	0.579	0.555	9
100	ND	ND	ND	
63	0.218	0.190	0.204	14

74	2.221	2.314	2.268	4
70+76	5.280	5.248	5.264	1
66+95	5.493	5.355	5.424	3
91	0.740	0.779	0.759	5
56+60	3.877	3.917	3.897	1
101	6.207	6.312	6.260	2
99	3.135	3.091	3.113	1
83	0.357	0.398	0.377	11
97	1.751	1.781	1.766	2
87+81	3.213	3.248	3.230	1
85	0.909	0.769	0.839	17
136	0.397	0.383	0.390	4
77+110	8.911	9.028	8.969	1
82	0.697	0.682	0.690	2
151	1.844	1.838	1.841	0
135+144	1.259	1.207	1.233	4
107	0.655	0.677	0.666	3
149	4.821	5.133	4.977	6
118	4.978	5.259	5.119	5
131	0.082	0.089	0.085	8
146	1.852	1.909	1.881	3
153+132+105	14.731	15.385	15.058	4
141	0.549	0.493	0.521	11
137+176	0.624	0.644	0.634	3
163+138	12.071	12.478	12.274	3
158	1.621	1.619	1.620	0
129+178	0.624	0.595	0.609	5
187+182	2.802	3.023	2.913	8
183	1.379	1.291	1.335	7
128	1.232	1.279	1.255	4
185	0.237	0.243	0.240	3
174	1.202	1.194	1.198	1
177	1.136	1.191	1.164	5
202+171	0.501	0.512	0.507	2
157+200	0.415	0.363	0.389	13
172+197	0.544	0.524	0.534	4
180	4.458	4.447	4.452	0
193	0.632	0.618	0.625	2
191	0.130	0.090	0.110	37
199	0.095	0.079	0.087	18
170+190	3.410	3.425	3.417	0
201	1.750	1.814	1.782	4
203+196	2.044	2.050	2.047	0
189	0.412	0.371	0.391	11
208+195	1.373	1.302	1.338	5

207	0.114	0.088	0.101	26
194	0.836	0.801	0.819	4
205	0.128	0.052	0.090	85
206	0.936	0.863	0.900	8
209	0.279	0.272	0.276	3

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g	
opDDE	3.031	3.247	3.139	7
ppDDE	22.888	24.304	23.596	6
op ddt	8.246	8.334	8.290	1
pp ddt	BDL	BDL	BDL	
o,p ddd	1.160	1.045	1.103	10
p,p ddd	6.218	6.234	6.226	0
Total DDXs	41.544	43.164	42.354	4
alpha BHC	BDL	BDL	BDL	
beta BHC	BDL	BDL	BDL	
delta BHC	0.125	0.092	0.109	30
lindane	ND	BDL	BDL	
heptachlor	0.504	0.441	0.472	13
heptachlor epoxide	4.157	4.062	4.109	2
oxychlordane	2.827	2.785	2.806	2
gamma chlordane	7.793	7.572	7.683	3
alpha chlordane	10.954	10.571	10.762	4
cis nonachlor	ND	0.566	BDL	
trans nonachlor	9.355	9.976	9.666	6
Total Chlordanes	35.590	35.971	35.781	1
dieldrin	1.062	1.065	1.063	0
endrin	BDL	BDL	BDL	
aldrin	0.342	0.315	0.328	8
endosulfan I	0.621	0.718	0.670	15
endosulfan II	0.619	0.657	0.638	6
average of total OCP's				7

Table 4. Laboratory Triplicate Analysis of Individual Analytes

CHEM ID F-number	9454F1 F-2495	9454dupF1 F-2495	9454tripF1 F-2495	Average	Standard Deviation	Relative Standard Deviation
LIPID PERCENT (%)	2.13	2.15	2.12	2.13	0.01	1
EXTRACTION MASS (g)	1.988	1.999	2.124	2.04	0.08	4
SURROGATE RECOVERY (%)						
PCB 14	112	122	114	116	5	5
PCB 65	88	98	92	93	5	6
PCB 166	97	107	101	101	5	5
TOTAL PCBs	310	339	333	327	15	5
TOTAL DDXs	58.9	67.7	67.6	65	5	8
TOTAL CHLORDANES	39.6	44.8	45.2	43	3	7
PCB's	ng/g	ng/g	ng/g			
1	0.374	0.215	0.184	0.258	0.102	40
3	0.872	0.399	0.327	0.533	0.296	56
4+10	BDL	BDL	BDL	BDL		
7	BDL	BDL	BDL	BDL		
6	0.049	0.036	0.028	0.038	0.010	27
8+5	0.492	0.498	0.473	0.488	0.013	3
19	0.045	BDL	BDL	BDL		
12+13	0.026	0.016	BDL	BDL		
18	0.728	0.778	0.759	0.755	0.025	3
17	0.312	0.340	0.331	0.327	0.014	4
24+27	BDL	BDL	BDL	BDL		
16+32	0.532	0.583	0.588	0.568	0.031	5
29	BDL	BDL	BDL	BDL		
26	0.472	0.510	0.506	0.496	0.021	4
25	BDL	BDL	BDL	BDL		
31+28	4.954	5.330	5.491	5.258	0.275	5
53+33+21	0.830	0.944	0.884	0.886	0.057	6
22	1.801	1.968	1.970	1.913	0.097	5
45	0.465	0.485	0.493	0.481	0.015	3
46	0.052	0.055	0.057	0.055	0.003	5
52	4.474	4.974	4.854	4.767	0.261	5
49	4.119	4.555	4.472	4.382	0.232	5
47	1.517	1.690	1.522	1.576	0.099	6
48	0.488	0.480	0.445	0.471	0.023	5
44	3.954	4.444	4.179	4.193	0.245	6
37+42	1.450	1.643	0.906	1.333	0.382	29
41+71	4.487	5.196	4.799	4.827	0.356	7
40	0.642	0.729	0.714	0.695	0.047	7
100	0.608	0.629	0.587	0.608	0.021	3
63	0.494	0.576	0.532	0.534	0.041	8
74	4.315	4.849	4.722	4.629	0.279	6

70+76	4.434	5.124	4.791	4.783	0.345	7
66+95	15.133	17.029	16.232	16.131	0.952	6
91	1.092	1.182	1.191	1.155	0.055	5
56+60	5.093	5.562	5.378	5.345	0.236	4
101	7.897	8.791	8.620	8.436	0.474	6
99	7.446	4.895	5.031	5.791	1.435	25
83	0.433	0.504	0.453	0.463	0.037	8
97	2.469	2.737	2.749	2.652	0.159	6
87+81	1.930	2.163	2.151	2.081	0.131	6
85	0.895	1.013	0.955	0.954	0.059	6
136	0.367	0.401	0.384	0.384	0.017	4
77+110	12.906	14.441	14.306	13.885	0.850	6
82	0.623	0.739	0.730	0.697	0.065	9
151	1.753	2.025	1.968	1.915	0.144	7
135+144	1.548	1.735	1.691	1.658	0.098	6
107	1.074	1.277	1.228	1.193	0.106	9
149	8.484	9.590	9.251	9.108	0.567	6
118	10.054	10.919	10.772	10.582	0.463	4
131	0.215	0.223	0.231	0.223	0.008	4
146	3.867	4.307	4.181	4.118	0.227	6
153+132+105	34.570	38.213	37.267	36.683	1.890	5
141	0.729	0.804	0.775	0.769	0.037	5
137+176	1.153	1.271	1.273	1.232	0.069	6
163+138	26.909	29.846	29.287	28.681	1.560	5
158	1.707	1.882	1.869	1.819	0.097	5
129+178	2.094	1.626	1.588	1.769	0.282	16
187+182	9.536	10.530	10.314	10.127	0.523	5
183	5.823	6.404	6.308	6.178	0.312	5
128	2.335	2.514	2.514	2.454	0.103	4
185	0.810	0.887	0.854	0.850	0.038	5
174	4.289	4.701	4.664	4.551	0.228	5
177	3.217	3.524	3.489	3.410	0.168	5
202+171	3.480	3.808	3.796	3.695	0.186	5
157+200	1.276	1.431	1.376	1.361	0.078	6
172+197	6.453	7.176	7.021	6.883	0.381	6
180	31.314	33.699	33.814	32.942	1.411	4
193	3.644	4.864	5.029	4.512	0.757	17
191	0.538	0.575	0.632	0.582	0.048	8
199	0.168	0.173	0.183	0.175	0.008	4
170+190	14.572	16.240	16.174	15.662	0.945	6
201	6.350	7.014	6.963	6.776	0.369	5
203+196	9.418	10.424	10.418	10.087	0.579	6
189	0.869	0.957	0.953	0.926	0.050	5
208+195	4.899	5.447	5.476	5.274	0.325	6
207	0.220	0.248	0.257	0.242	0.019	8
194	4.172	4.655	4.663	4.496	0.281	6
205	0.203	0.212	0.229	0.214	0.013	6
206	2.955	3.316	3.284	3.185	0.200	6
209	0.154	0.174	0.171	0.166	0.011	7

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g			
opDDE	2.219	2.465	2.423	2.369	0.131	6
ppDDE	42.101	48.229	49.074	46.468	3.805	8
op ddt	4.244	4.885	4.566	4.565	0.321	7
pp ddt	BDL	BDL	BDL	BDL		
o,p ddd	0.682	0.887	0.944	0.838	0.138	16
p,p ddd	9.615	11.228	10.564	10.469	0.811	8
Total DDXs	58.861	67.694	67.571	64.709	5.065	8
alpha BHC	BDL	BDL	BDL	BDL		
beta BHC	0.327	ND	0.511	BDL		
delta BHC	BDL	BDL	BDL	BDL		
lindane	0.320	0.386	0.280	0.328	0.053	16
heptachlor	0.665	0.743	0.755	0.721	0.049	7
heptachlor epoxide	2.077	2.159	2.270	2.169	0.097	4
oxychlordane	0.962	1.217	1.082	1.087	0.127	12
gamma chlordane	3.830	4.492	5.515	4.612	0.849	18
alpha chlordane	1.683	2.333	1.876	1.964	0.334	17
cis nonachlor	9.475	9.906	10.145	9.842	0.339	3
trans nonachlor	20.881	23.987	23.548	22.805	1.681	7
Total Chlordanes	39.572	44.837	45.191	43.200	3.147	7
dieldrin	4.057	4.432	4.658	4.382	0.304	7
endrin	ND	ND	ND	ND		
aldrin	BDL	0.175	BDL	BDL		
endosulfan I	1.554	1.850	2.008	1.804	0.230	13
endosulfan II	0.516	0.730	0.613	0.620	0.107	17

CHEM ID	0272-F1	0272dup-F1	0272trip-F1	average	standard deviation	relative standard deviation
F-number	F-2036	F-2036	F-2036			
LIPID PERCENT (%)	0.52	0.71	0.77	0.669	0.131	20
EXTRACTION MASS (g)	2.032	2.017	2.01	2.020	0.011	1
SURROGATE RECOVERY (%)						
PCB 14	100	99	98	98.822	1.080	1
PCB 65	92	92	98	93.981	3.545	4
PCB 166	84	85	0	56.368	48.820	87
TOTAL PCBs	18.5	18.3	19.1	18.616	0.417	2
TOTAL DDXs	5.0	5.0	4.1	4.686	0.550	12
TOTAL CHLORDANES	1.3	1.6	1.1	1.336	0.257	19

PCB's	ng/g	ng/g	ng/g			
1	ND	ND	ND	ND		
3	ND	ND	ND	ND		
4+10	BDL	BDL	BDL	BDL		
7	BDL	BDL	BDL	BDL		
6	ND	BDL	ND	BDL		
8+5	ND	ND	ND	ND		
19	BDL	0.034	BDL	BDL		
12+13	ND	ND	ND	ND		
18	ND	BDL	ND	BDL		
17	ND	BDL	ND	BDL		
24+27	BDL	BDL	BDL	BDL		
16+32	BDL	BDL	BDL	BDL		
29	BDL	BDL	BDL	BDL		
26	0.048	0.028	BDL	BDL	0.014	
25	BDL	BDL	BDL	BDL		
31+28	0.315	0.342	0.342	0.333	0.016	5
53+33+21	BDL	BDL	BDL	BDL		
22	0.312	0.331	0.226	0.290	0.056	19
45	BDL	ND	BDL	BDL		
46	0.026	ND	BDL	BDL		
52	0.422	0.400	0.475	0.432	0.038	9
49	0.318	0.412	0.365	0.365	0.047	13
47	BDL	BDL	BDL	BDL		
48	BDL	BDL	BDL	BDL		
44	0.240	0.255	0.254	0.250	0.009	4
37+42	0.117	0.133	0.206	0.152	0.047	31
41+71	ND	ND	BDL	BDL		
40	0.042	0.040	0.023	0.035	0.010	30
100	0.052	0.026	BDL	BDL		
63	0.067	0.066	0.029	0.054	0.022	40
74	0.179	0.167	0.185	0.177	0.009	5
70+76	0.515	0.465	0.507	0.496	0.027	5
66+95	1.197	1.212	0.430	0.946	0.447	47
91	0.091	0.084	0.087	0.087	0.003	4
56+60	0.954	0.952	0.985	0.964	0.018	2

101	0.629	0.645	0.703	0.659	0.039	6
99	0.256	0.256	0.288	0.267	0.018	7
83	0.045	0.034	0.028	0.036	0.009	24
97	0.150	0.141	0.172	0.154	0.016	10
87+81	0.515	0.477	0.505	0.499	0.020	4
85	0.195	0.151	0.174	0.173	0.022	13
136	0.075	0.062	0.051	0.063	0.012	19
77+110	0.922	0.871	0.944	0.913	0.038	4
82	0.099	0.070	0.064	0.078	0.019	24
151	0.242	0.214	0.265	0.241	0.026	11
135+144	0.131	0.124	0.148	0.135	0.012	9
107	0.079	0.064	0.090	0.078	0.013	17
149	0.638	0.694	0.709	0.680	0.037	6
118	0.434	0.428	0.468	0.443	0.021	5
131	0.014	0.010	0.010	0.012	0.002	19
146	0.285	0.254	0.284	0.274	0.018	6
153+132+105	1.991	1.954	2.207	2.051	0.137	7
141	0.089	0.083	0.094	0.089	0.006	6
137+176	0.103	0.084	0.102	0.096	0.011	11
163+138	1.354	1.347	1.526	1.409	0.101	7
158	0.229	0.194	0.251	0.224	0.029	13
129+178	0.173	0.165	0.159	0.166	0.007	4
187+182	0.527	0.548	0.626	0.567	0.052	9
183	0.308	0.320	0.380	0.336	0.039	11
128	0.121	0.120	0.140	0.127	0.012	9
185	0.080	0.083	0.077	0.080	0.003	3
174	0.174	0.156	0.201	0.177	0.023	13
177	0.188	0.183	0.223	0.198	0.022	11
202+171	0.194	0.184	0.218	0.199	0.018	9
157+200	0.075	0.061	0.082	0.073	0.011	15
172+197	0.100	0.089	0.113	0.100	0.012	12
180	0.759	0.781	0.917	0.819	0.085	10
193	ND	BDL	ND	BDL		
191	0.018	0.018	0.022	0.019	0.002	12
199	0.015	0.016	0.018	0.016	0.002	10
170+190	0.739	0.734	0.805	0.759	0.040	5
201	0.393	0.391	0.474	0.420	0.047	11
203+196	0.486	0.484	0.589	0.519	0.060	12
189	0.103	0.108	0.068	0.093	0.022	23
208+195	0.288	0.300	0.311	0.300	0.012	4
207	0.021	0.029	0.023	0.024	0.004	18
194	0.202	0.203	0.228	0.211	0.015	7
205	0.021	0.018	0.017	0.018	0.002	13
206	0.134	0.134	0.147	0.138	0.007	5
209	0.027	0.031	0.037	0.032	0.005	15

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g			
opDDE	0.178	0.208	0.195	0.194	0.015	8
ppDDE	2.546	2.657	1.587	2.263	0.588	26
op ddt	0.506	0.516	0.544	0.522	0.020	4
pp ddt	BDL	BDL	BDL	BDL		
o,p ddd	0.109	BDL	BDL	BDL		
p,p ddd	1.644	1.641	1.726	1.670	0.048	3
Total DDXs	4.983	5.022	4.051	4.686	0.550	12
alpha BHC	BDL	BDL	BDL	BDL		
beta BHC	BDL	BDL	BDL	BDL		
delta BHC	BDL	BDL	BDL	BDL		
lindane	BDL	0.224	ND	BDL		
heptaclor	ND	ND	BDL	BDL		
heptachlor epoxide	0.171	0.131	BDL	BDL	0.028	
oxychlordane	0.284	0.237	0.293	0.271	0.030	11
gamma chlordane	BDL	0.506	BDL	BDL		
alpha chlordane	0.202	0.175	0.270	0.216	0.049	23
cis nonachlor	ND	ND	ND	ND		
trans nonachlor	0.598	0.577	0.567	0.581	0.016	3
Total Chlordanes	1.254	1.625	1.130	1.336	0.257	19
dieldrin	ND	ND	ND	ND		
endrin	BDL	BDL	BDL	BDL		
aldrin	BDL	BDL	BDL	BDL		
endosulfan 1	BDL	BDL	BDL	BDL		
endosulfan II	0.092	0.073	0.082	0.082	0.010	12

CHEM ID	0281-F1	0281dup-F1	0281trip-F1	average	standard deviation	relative standard deviation
F-number	F-2045	F-2045	F-2045			
LIPID PERCENT (%)	1.85	1.74	1.61	1.731	0.122	7
EXTRACTION MASS (g)	2.026	2.092	2.016	2.045	0.041	2
SURROGATE RECOVERY (%)						
PCB 14	98	103	94	98.522	4.688	5
PCB 65	99	99	91	96.314	4.505	5
PCB 166	96	95	88	93.187	4.311	5
TOTAL PCBs	192.2	184.9	162.3	179.799	15.586	9
TOTAL DDXs	96.3	90.4	76.9	87.854	9.971	11
TOTAL CHLORDANES	13.6	13.8	12.0	13.119	0.992	8

PCB's	ng/g	ng/g	ng/g			
1	ND	ND	ND	ND		
3	ND	BDL	BDL	BDL		
4+10	BDL	BDL	BDL	BDL		
7	BDL	BDL	BDL	BDL		
6	ND	BDL	BDL	BDL		
8+5	ND	BDL	ND	BDL		
19	BDL	BDL	BDL	BDL		
12+13	BDL	0.023	BDL	BDL		
18	0.348	0.332	0.285	0.322	0.033	10
17	0.154	0.142	0.122	0.139	0.016	12
24+27	BDL	BDL	BDL	BDL		
16+32	0.293	0.281	0.291	0.289	0.006	2
29	0.088	BDL	BDL	BDL		
26	0.166	0.106	0.093	0.122	0.039	32
25	0.474	BDL	BDL	BDL		
31+28	1.696	1.617	1.405	1.573	0.151	10
53+33+21	0.173	0.264	0.228	0.221	0.046	21
22	0.924	0.939	0.687	0.850	0.142	17
45	0.209	0.215	0.167	0.197	0.026	13
46	0.094	0.035	ND	BDL		
52	2.698	2.666	2.299	2.554	0.222	9
49	1.798	1.743	1.570	1.703	0.119	7
47	1.674	1.469	1.332	1.491	0.172	12
48	0.445	0.436	0.390	0.424	0.030	7
44	2.113	2.124	1.858	2.032	0.150	7
37+42	1.135	0.969	1.118	1.074	0.092	9
41+71	1.481	1.056	1.247	1.261	0.213	17
40	0.401	0.398	0.352	0.383	0.028	7
100	0.115	0.129	0.115	0.120	0.008	6
63	0.244	0.256	0.242	0.247	0.008	3
74	1.939	1.850	1.628	1.806	0.160	9
70+76	3.388	3.218	2.850	3.152	0.275	9
66+95	4.701	4.451	3.847	4.333	0.439	10
91	0.563	0.515	0.454	0.511	0.055	11
56+60	7.979	7.932	6.809	7.573	0.662	9

101	5.979	5.850	5.069	5.633	0.492	9
99	2.923	2.826	2.436	2.728	0.258	9
83	0.390	0.381	0.330	0.367	0.033	9
97	1.547	1.500	1.302	1.450	0.130	9
87+81	3.061	2.886	2.549	2.832	0.260	9
85	1.862	1.521	1.449	1.610	0.221	14
136	0.365	0.356	0.309	0.343	0.030	9
77+110	7.726	7.304	6.338	7.123	0.712	10
82	0.635	0.642	0.537	0.604	0.059	10
151	2.752	2.608	2.245	2.535	0.261	10
135+144	1.461	1.419	1.241	1.374	0.117	9
107	0.862	0.793	0.697	0.784	0.083	11
149	5.877	5.900	5.260	5.679	0.363	6
118	5.219	4.896	4.264	4.793	0.486	10
131	0.064	0.064	0.053	0.060	0.006	11
146	3.224	3.149	2.757	3.043	0.251	8
153+132+105	24.141	23.730	20.984	22.952	1.716	7
141	0.551	0.561	0.509	0.540	0.028	5
137+176	0.952	0.864	0.750	0.855	0.102	12
163+138	18.091	17.426	15.299	16.939	1.458	9
158	2.505	2.345	2.090	2.314	0.209	9
129+178	1.604	1.626	1.443	1.558	0.100	6
187+182	6.948	6.878	5.959	6.595	0.552	8
183	4.131	3.956	3.429	3.839	0.365	10
128	1.564	1.489	1.316	1.456	0.127	9
185	0.507	0.492	0.477	0.492	0.015	3
174	2.609	2.511	2.207	2.442	0.210	9
177	2.256	2.190	1.906	2.117	0.186	9
202+171	2.692	2.596	2.303	2.531	0.203	8
157+200	0.690	0.723	0.588	0.667	0.071	11
172+197	1.598	1.500	1.317	1.472	0.142	10
180	14.107	13.704	11.983	13.265	1.128	9
193	1.266	1.532	1.134	1.311	0.203	15
191	0.302	0.320	0.279	0.300	0.020	7
199	0.072	0.073	0.072	0.073	0.001	1
170+190	8.688	8.201	7.143	8.011	0.790	10
201	4.390	4.274	3.708	4.124	0.365	9
203+196	5.644	5.387	4.738	5.256	0.467	9
189	0.784	0.737	0.613	0.711	0.088	12
208+195	2.632	2.513	2.257	2.468	0.192	8
207	0.178	0.170	0.155	0.168	0.012	7
194	2.203	2.068	1.839	2.037	0.184	9
205	0.151	0.159	0.119	0.143	0.021	15
206	1.475	1.420	1.265	1.387	0.109	8
209	0.217	0.204	0.196	0.205	0.011	5

ORGANOCHLORINE PESTICIDES	ng/g	ng/g	ng/g			
opDDE	2.035	2.057	1.719	1.937	0.189	10
ppDDE	65.445	59.062	50.090	58.199	7.714	13
op ddt	5.266	5.259	5.096	5.207	0.096	2
pp ddt	0.754	0.898	0.764	0.805	0.080	10
o,p ddd	4.580	4.832	4.324	4.579	0.254	6
p,p ddd	18.214	18.310	14.859	17.128	1.965	11
Total DDXs	96.294	90.417	76.852	87.854	9.971	11
alpha BHC	BDL	BDL	BDL	BDL		
beta BHC	BDL	BDL	BDL	BDL		
delta BHC	BDL	BDL	BDL	BDL		
lindane	BDL	ND	ND	BDL		
heptaclor	0.168	0.187	0.115	0.157	0.037	24
heptachlor epoxide	0.480	0.812	0.546	0.613	0.176	29
oxychlordane	1.547	1.509	1.608	1.555	0.050	3
gamma chlordane	1.843	1.915	1.435	1.731	0.259	15
alpha chlordane	3.057	2.987	2.808	2.951	0.129	4
cis nonachlor	ND	ND	ND	ND		
trans nonachlor	6.487	6.385	5.467	6.113	0.562	9
Total Chlordanes	13.582	13.794	11.979	13.119	0.992	8
dieldrin	BDL	BDL	BDL	BDL		
endrin	BDL	BDL	BDL	BDL		
aldrin	BDL	BDL	BDL	BDL		
endosulfan 1	ND	ND	ND	ND		
endosulfan II	0.320	0.344	0.333	0.332	0.012	4

Table 5. Laboratory Duplicate and Triplicate Total Analytes

<u>Duplicate Samples</u>	<u>Mean RPD</u>	<u>Std. Dev</u>	<u>%</u>									
	3	2	64									
	11	21	188									
	4	3	75									
CHEM ID	9432	9432dup	AVE	RPD	9461	9461Dup	AVE	RPD	9471	9471dup	AVE	RPD
				%				%				%
TOTAL PCBs (ng/g)	347.902	366.160	357.031	5	284.823	269.866	277.345	5	69.202	72.231	70.716	4
TOTAL DDXs (ng/g)	86.813	95.599	91.206	10	69.456	67.415	68.436	3	19.053	19.107	19.080	0
TOTAL CHLORDANES (ng/g)	115.890	118.635	117.262	2	56.868	55.412	56.140	3	20.633	20.911	20.772	1
CHEM ID	9543R	9543dup	AVE	RPD	9544	9544dup	AVE	RPD	238	0238dup	AVE	RPD
				%				%				%
TOTAL PCBs (ng/g)	1274.956	1245.279	1260.117	2	880.811	867.601	874.206	2	47.485	46.735	47.110	2
TOTAL DDXs (ng/g)	275.881	279.526	277.703	1	177.565	182.411	179.988	3	5.182	4.656	4.919	11
TOTAL CHLORDANES (ng/g)	119.422	127.799	123.610	7	211.010	219.149	215.080	4	8.238	7.969	8.103	3
CHEM ID	248	0248dup	AVE	RPD	257	0257dup	AVE	RPD	378	0378dup	AVE	RPD
				%				%				%
TOTAL PCBs (ng/g)	36.504	34.383	35.443	6	704.655	708.314	706.485	1	138.588	140.936	139.762	2
TOTAL DDXs (ng/g)	24.349	48.198	36.273	66	201.160	206.322	203.741	3	41.544	43.164	42.354	4
TOTAL CHLORDANES (ng/g)	13.971	12.721	13.346	9	138.800	141.967	140.383	2	35.590	35.971	35.781	1

<u>Triplicate Samples</u>	<u>Mean RPD</u>	<u>Std. Dev</u>	<u>%</u>
	5	3	63
	10	2	21
	11	7	60

CHEM ID	9454	9454dup	9454trip	AVE	STD DEV	RSD %	272	0272dup	0272trip	AVE	STD DEV	RSD %
							18.51					
TOTAL PCBs (ng/g)	310.118	339.194	332.757	327.357	15.272	5	6	18.258	19.074	18.616	0.417	2
TOTAL DDXs (ng/g)	58.861	67.694	67.571	64.709	5.065	8	4.983	5.022	4.051	4.686	0.550	12
TOTAL CHLORDANES (ng/g)	39.572	44.837	45.191	43.200	3.147	7	1.254	1.625	1.130	1.336	0.257	19

CHEM ID	281	0281dup	0281trip	AVE	STD DEV	RSD %
TOTAL PCBs (ng/g)	192.188	184.910	162.299	179.799	15.586	9
TOTAL DDXs (ng/g)	96.294	90.417	76.852	87.854	9.971	11
TOTAL CHLORDANES (ng/g)	13.582	13.794	11.979	13.119	0.992	8

Table 6. Laboratory Limits of Detection

BLANKS	11503	12703	13003	20403	50503	51303	80403	81303	81903	82703	90303	90903	Average	Std. Dev	MDL
POLYCHLORINATED BIPHENYLS	ng	ng	ng												
1	0.129	0.137	0.159	0.184	0.017	0.040	0.043	0.213	0.159	0.154	0.183	0.237	0.138	0.070	0.348
3	0.013	0.195	0.285	0.034	0.096	0.079	0.183	0.109	0.203	0.117	0.520	0.149	0.165	0.135	0.571
4+10	0.038	0.052	0.029	0.013	0.026	0.043	0.143	0.027	0.042	0.029	0.051	0.032	0.044	0.033	0.143
7	0.004	0.003	0.009	0.001	0.006	0.009	0.035	0.025	0.024	0.031	0.040	0.037	0.019	0.015	0.063
6	0.020	0.012	0.020	0.035	0.018	0.022	0.039	0.010	0.010	0.011	0.016	0.012	0.019	0.010	0.048
8+5	0.087	0.111	0.134	0.086	0.093	0.079	0.097	0.117	0.105	0.146	0.163	0.204	0.119	0.037	0.230
19	0.023	0.023	0.013	0.031	0.033	0.019	0.046	0.035	0.033	0.026	0.035	0.029	0.029	0.009	0.055
12+13	0.018	0.006	0.017	0.005	0.009	0.022	0.009	0.004	0.005	0.006	0.011	0.012	0.010	0.006	0.028
18	0.032	0.020	0.020	0.026	0.020	0.048	0.027	0.004	0.015	0.071	0.027	0.078	0.032	0.022	0.099
17	0.022	0.018	0.018	0.024	0.027	0.025	0.030	0.027	0.025	0.038	0.025	0.046	0.027	0.008	0.051
24+27	0.008	0.023	0.022	0.002	0.024	0.033	0.236	0.065	0.112	0.045	0.089	0.060	0.060	0.064	0.253
16+32	0.100	0.056	0.036	0.054	0.028	0.052	0.076	0.085	0.090	0.065	0.101	0.079	0.069	0.024	0.140
29	0.014	0.010	0.011	0.011	0.013	0.013	0.092	0.077	0.095	0.077	0.084	0.068	0.047	0.037	0.159
26	0.010	0.012	0.013	0.009	0.021	0.014	0.012	0.015	0.014	0.008	0.029	0.016	0.015	0.006	0.031
25	0.024	0.024	0.020	0.013		0.005	0.307	0.048	0.089	0.075	0.322	0.180	0.101	0.117	0.451
31+28	0.220	0.070	0.069	0.058	0.104	0.097	0.112	0.161	0.165	0.138	0.122	0.149	0.122	0.047	0.264
53+33+21	0.112	0.096	0.055	0.065	0.048	0.049	0.027	0.066	0.067	0.092	0.085	0.077	0.070	0.024	0.142
22	0.169	0.089	0.062	0.075	0.068	0.123	0.126	0.124	0.118	0.073	0.154	0.105	0.107	0.035	0.211
45	0.037	0.029	0.020	0.002	0.010	0.021	0.012	0.011	0.011	0.010	0.020	0.011	0.016	0.010	0.045
46	0.004	0.011	0.012	0.006	0.010	0.016	0.013	0.012	0.021	0.005	0.023	0.025	0.013	0.007	0.034
52	0.099	0.083	0.058	0.075	0.102	0.165	0.035	0.102	0.047	0.078	0.036	0.088	0.081	0.036	0.188
49	0.053	0.040	0.060	0.062	0.053	0.114	0.055	0.100	0.070	0.020	0.055	0.065	0.062	0.025	0.136
47	2.013	0.616	0.210	0.422	0.701	0.840	0.051	0.053	0.037	0.023	0.083	0.019	0.422	0.582	2.168
48	0.119	0.031	0.013	0.031	0.025	0.054	0.026	0.221	0.116	0.184	0.048	0.396	0.105	0.114	0.447
44	0.100	0.061	0.018	0.038	0.032	0.103		0.079	0.060	0.058	0.056	0.073	0.061	0.026	0.141
37+42	0.052	0.048	0.033	0.026	0.036	0.071	0.099	0.062	0.036	0.017	0.036	0.036	0.046	0.022	0.113
41+71	0.064	0.040	0.033	0.030	0.044	0.071	0.111	0.086	0.120	0.059	0.100	0.024	0.065	0.033	0.164
40	0.016	0.015	0.006	0.006	0.009	0.023	0.028	0.024	0.021	0.014	0.024	0.021	0.017	0.007	0.039
100	0.002	0.018	0.011	0.003	0.010	0.015	0.024	0.013	0.021	0.004	0.024	0.030	0.015	0.009	0.042
63	0.019	0.016	0.006	0.006	0.018	0.012	0.026	0.015	0.017	0.009	0.023	0.009	0.015	0.006	0.034
74	0.038	0.036	0.037	0.031	0.035	0.094	0.052	0.085	0.054	0.027	0.060	0.041	0.049	0.021	0.113
70+76	0.109	0.099	0.082	0.056	0.060	0.106	0.107	0.137	0.074	0.088	0.081	0.092	0.091	0.023	0.159

66+95	0.218	0.176	0.094	0.169	0.155	0.317	0.174	0.141	0.063	0.206	0.045	0.185	0.162	0.073	0.381
91	0.008	0.010	0.004	0.008	0.006	0.025	0.007	0.024	0.014	0.011	0.014	0.011	0.012	0.007	0.032
56+60	0.115	0.077	0.027	0.044	0.031	0.109	0.118	0.177	0.153	0.091	0.140	0.109	0.099	0.048	0.242
101	0.054	0.047	0.015	0.041	0.031	0.094	0.031	0.116	0.035	0.051	0.022	0.037	0.048	0.029	0.136
99	0.023	0.022	0.010	0.026	0.020	0.053	0.013	0.060	0.019	0.021	0.025	0.023	0.026	0.015	0.071
83	0.003	0.005	0.004	0.006	0.006	0.016	0.020	0.010	0.009	0.004	0.017	0.010	0.009	0.006	0.026
97	0.022	0.015	0.004	0.014	0.010	0.031	0.015	0.038	0.015	0.020	0.019	0.017	0.018	0.009	0.045
87+81	0.039	0.046	0.047	0.091	0.095	0.108	0.433			0.118		0.110	0.121	0.121	0.484
85	0.005	0.000	0.001	0.004	0.012	0.022	0.023	0.034	0.028	0.012	0.017	0.016	0.015	0.011	0.048
136	0.007	0.006	0.002	0.004	0.004	0.008	0.008	0.013	0.011	0.004	0.018	0.017	0.009	0.005	0.024
77+110	0.102	0.081	0.023	0.067	0.050	0.133	0.070	0.193	0.057	0.080	0.048	0.066	0.081	0.045	0.216
82	0.008	0.008	0.011	0.010	0.005	0.016	0.016	0.013	0.018	0.003	0.023	0.020	0.012	0.006	0.031
151	0.010	0.009	0.003	0.009	0.005	0.025	0.011	0.023	0.024	0.013	0.012	0.026	0.014	0.008	0.038
135+144	0.018	0.016	0.007	0.011	0.014	0.023	0.016	0.021	0.018	0.005	0.018	0.018	0.015	0.005	0.031
107	0.004	0.013	0.006	0.005	0.007	0.020	0.008	0.014	0.016	0.009	0.023	0.015	0.012	0.006	0.030
149	0.068	0.028	0.039	0.060	0.035	0.092	0.021	0.080	0.036	0.031	0.031	0.025	0.045	0.023	0.115
118	0.066	0.032	0.052	0.060	0.039	0.096	0.036	0.094	0.030	0.028	0.015	0.027	0.048	0.026	0.127
131	0.005	0.001	0.001	0.001	0.001	0.005	0.004	0.003	0.002	0.001	0.003	0.002	0.002	0.002	0.007
146	0.020	0.021	0.016	0.018	0.022	0.048	0.021	0.059	0.080	0.009	0.094	0.026	0.036	0.028	0.119
153+132+105	0.144	0.113	0.039	0.125	0.099	0.295	0.169	0.301	0.256	0.124	0.228	0.116	0.167	0.083	0.418
141	0.011	0.004	0.006	0.003	0.007	0.011	0.010	0.008	0.011	0.006	0.009	0.013	0.008	0.003	0.017
137+176	0.043	0.030	0.009	0.027	0.012	0.070	0.027	0.012	0.012	0.002	0.012	0.008	0.022	0.019	0.079
163+138	0.130	0.090	0.028	0.093	0.067	0.194	0.097	0.240	0.065	0.084	0.056	0.104	0.104	0.060	0.283
158	0.029	0.035	0.057	0.009	0.039	0.043	0.108	0.053	0.062	0.019	0.060	0.044	0.046	0.025	0.122
129+178	0.005	0.007	0.003	0.004	0.004	0.011	0.012	0.012	0.027	0.003	0.021	0.010	0.010	0.008	0.033
187+182	0.003	0.003		0.006	0.018	0.059	0.043	0.069	0.039	0.018	0.064	0.020	0.031	0.025	0.105
183	0.012	0.015	0.000	0.015	0.014	0.034	0.034	0.023	0.030	0.011	0.030	0.013	0.019	0.011	0.051
128	0.029	0.020	0.006	0.015	0.012	0.034	0.021	0.021	0.012	0.013	0.017	0.013	0.018	0.008	0.041
185	0.002	0.001	0.000	0.002	0.007	0.006	0.018	0.022	0.015	0.004	0.005	0.020	0.008	0.008	0.032
174	0.022	0.012	0.002	0.009	0.007	0.027	0.009	0.028	0.015	0.009	0.014	0.012	0.014	0.008	0.038
177	0.027	0.011	0.002	0.009	0.007	0.020	0.021	0.025	0.018	0.008	0.035	0.030	0.018	0.010	0.048
202+171	0.009	0.002	0.003	0.010	0.007	0.035	0.025	0.016	0.016	0.007	0.020	0.028	0.015	0.010	0.046
157+200	0.001	0.014	0.005	0.006	0.007	0.019	0.010	0.032	0.024	0.003	0.039		0.015	0.013	0.052
172+197	0.012	0.004	0.016	0.116	0.023	0.107	0.067	0.049	0.048	0.015	0.041	0.019	0.043	0.037	0.154
180	0.049	0.050	0.012	0.070	0.021	0.106	0.027	0.093	0.038	0.035	0.045	0.040	0.049	0.028	0.133
193	0.000	0.008	0.009	0.295	0.013	0.013	0.010	0.068	0.077	0.011	0.078	0.014	0.050	0.083	0.297
191	0.008	0.003	0.000	0.023	0.003	0.004	0.004	0.007	0.015	0.005	0.015	0.010	0.008	0.007	0.028
199	0.017	0.005	0.003	0.002	0.002	0.009	0.003	0.002	0.006	0.003	0.004	0.005	0.005	0.004	0.018
170+190	0.025	0.013	0.004	0.045	0.020	0.058	0.020	0.055	0.077	0.044	0.028	0.056	0.037	0.022	0.103
201	0.023	0.012	0.003	0.016	0.015	0.032	0.013	0.039	0.050	0.016	0.014	0.020	0.021	0.013	0.060
203+196	0.029	0.020	0.011	0.025	0.026	0.066	0.024	0.065	0.064	0.008	0.018	0.064	0.035	0.023	0.104

189	0.000	0.002	0.009	0.018	0.019	0.004	0.008	0.010	0.008	0.003	0.003	0.007	0.008	0.006	0.025
208+195	0.009	0.001	0.001	0.060	0.027	0.014	0.007	0.092	0.038	0.005	0.018	0.016	0.024	0.027	0.106
207	0.000	0.000	0.001	0.003	0.010	0.006	0.016	0.007	0.012	0.006	0.010	0.007	0.006	0.005	0.021
194	0.010	0.003	0.006	0.013	0.014	0.024	0.016	0.033	0.020	0.006	0.030	0.019	0.016	0.009	0.044
205	0.001	0.002	0.004	0.009	0.011	0.003	0.005	0.015	0.019	0.005	0.011	0.011	0.008	0.006	0.025
206	0.006	0.007	0.007	0.019	0.009	0.028	0.018	0.031	0.040	0.012	0.041	0.020	0.020	0.013	0.057
209	0.007	0.007	0.009	0.009	0.009	0.008	0.014	0.005	0.004	0.006	0.004	0.007	0.008	0.003	0.016
Total PCB's	5.224	3.201	2.210	3.219	2.872	5.050	4.180	4.755	3.819	3.008	4.277	4.000	3.818	0.935	6.624

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opDDE	0.026	0.029	0.009	0.021	0.012	0.020	0.031	0.078		0.036	0.037	0.037	0.031	0.018	0.086
ppDDE				0.015	0.005	0.117		0.159	0.028	0.246		0.022	0.085	0.092	0.361
op ddt	0.022	0.026	0.024	0.024	0.040	0.091	0.159	0.198	0.114	0.046	0.067	0.060	0.073	0.058	0.246
pp ddt	0.128	0.051	0.015	0.060	0.311	0.286	1.020	0.207	0.177	0.228	0.210	0.217	0.242	0.262	1.028
o,p ddd	0.078	0.013	0.005	0.007	0.093	0.028	0.047	0.030	0.054	0.025	0.020	0.029	0.036	0.028	0.118
p,p ddd	0.126	0.093	0.031	0.105	0.027	0.238	0.042	0.177	0.068	0.117	0.043	0.061	0.094	0.064	0.286
alpha BHC	0.009	0.025	0.009	0.071	0.032	0.022	0.071	0.027	0.023	0.120	0.226	0.261	0.075	0.085	0.331
beta BHC	0.023	0.145	0.016	0.138	0.220	0.239	0.016	0.046	0.047	0.035	0.076	0.034	0.086	0.080	0.325
delta BHC	0.020	0.004	0.004	0.009	0.027	0.014	0.061	0.023	0.034	0.112	0.062	0.057	0.035	0.032	0.131
lindane	0.115	0.057	0.052	0.045	0.069	0.046	0.027	0.084	0.119	0.144	0.151	0.168	0.090	0.048	0.233
heptaclor	0.016	0.087	0.084	0.051	0.062	0.075	0.025	0.030	0.043	0.046	0.054	0.064	0.053	0.023	0.121
heptachlor epoxide	0.004	0.018	0.012	0.014	0.011	0.010	0.008	0.131	0.195	0.066	0.036	0.031	0.045	0.059	0.223
oxychlordane	0.067	0.005	0.007	0.009	0.031	0.152	0.017	0.092	0.057	0.031	0.029	0.026	0.044	0.043	0.173
gamma chlordane	0.271	0.283	0.168	0.238	0.053	0.124	0.049	0.521	0.025	0.010	0.037	0.068	0.154	0.152	0.609
alpha chlordane	0.125	0.043	0.012	0.084	0.049	0.191	0.021	0.145	0.040	0.033	0.015	0.020	0.065	0.059	0.241
cis nonachlor	0.042	0.076	0.058	0.097	0.066	0.049	0.021	0.098	0.136	0.010	0.135	0.066	0.071	0.040	0.191
trans nonachlor	0.068	0.173	0.086	0.191	0.062	0.182	0.036	0.247	0.155	0.099	0.023	0.116	0.120	0.069	0.328
dieldrin	0.031	0.014	0.021	0.026									0.023	0.007	0.045
endrin	0.066	0.010	0.041	0.045	0.031	0.018	0.127	0.062	0.088	0.100	0.061	0.053	0.058	0.034	0.160
aldrin	0.292	0.011	0.004	0.064	0.033	0.005	0.083	0.068	0.038	0.029	0.031		0.060	0.081	0.304
endosulfan 1	0.067	0.060	0.037	0.043	0.062	0.031	0.036	0.168	0.134	0.070	0.069	0.057	0.069	0.041	0.193
endosulfan II	0.104	0.046	0.040	0.015	0.034	0.088	0.037	0.036	0.036	0.043	0.052	0.059	0.049	0.025	0.123
Average Surrogate Recoveries %															
14		89													
65		87													
166		88													

Table 7. Comparison between PCER and NIST for SRM 1974B-
Mussel Tissue

POLYCHLORINATED BIPHENYLS

	1974B <i>trial a</i> <i>ng/g</i>	1974B <i>trial b</i> <i>ng/g</i>	1974B <i>trial c</i> <i>ng/g</i>	PCER average	PCER Std Dev	NIST value	NIST std. dev	% Recovery
PCB 18	1.729	1.643	1.487	1.620	0.122	0.84	0.13	193
PCB 28+31	9.964	9.091	8.992	9.349	0.535	6.31	0.48	148
PCB 44	5.547	5.524	5.169	5.413	0.212	3.85	0.2	141
PCB 45	0.568	0.616	0.583	0.589	0.025	0.5	0.18	118
PCB 49	5.255	5.228	4.945	5.142	0.172	5.66	0.23	91
PCB 52	5.344	5.293	4.992	5.210	0.190	6.26	0.37	83
PCB 63	0.555	0.548	0.526	0.543	0.015	0.46	0.14	118
PCB 66+95	19.373	19.326	18.102	18.934	0.721	12.41	0.73	153
PCB 74	4.740	4.749	4.456	4.649	0.166	3.55	0.23	131
PCB 77+110	10.032	10.220	9.368	9.873	0.448	10.56	0.72	93
PCB 82	1.025	0.960	0.904	0.963	0.061	1.16	0.14	83
PCB 99	3.835	4.118	3.599	3.851	0.260	5.92	0.27	65
PCB 101	6.124	6.095	5.653	5.957	0.264	10.7	1.1	56
PCB 107	0.798	0.730	0.705	0.744	0.048	1.03	0.12	72
PCB 118	6.178	6.188	6.014	6.127	0.098	10.3	0.4	59
PCB 128	1.255	1.291	1.285	1.277	0.019	1.79	0.12	71
PCB 146	1.759	1.717	1.587	1.688	0.090	1.92	0.16	88
PCB 149	4.795	4.617	4.624	4.679	0.101	7.01	0.28	67
PCB 151	1.442	1.428	1.346	1.405	0.052	1.86	0.16	76
PCB 153+132+105	14.343	14.240	13.664	14.082	0.366	18.73	1.23	75
PCB 158	0.693	0.708	0.710	0.704	0.009	1.00	0.10	70
PCB 163+138	11.215	11.371	10.819	11.135	0.285	11.22	1.45	99
PCB 180	1.653	1.666	1.482	1.600	0.103	1.17	0.1	137
PCB 183	1.471	1.499	1.386	1.452	0.059	1.25	0.03	116
						14	23	60.86957

ORGANOCHLORINE PESTICIDES

	1974B <i>trial a</i>	1974B <i>trial b</i>	1974B <i>trial c</i>	PCER average	PCER Std Dev	NIST value	NIST std. dev	% Recovery
alpha chlordane	0.646	0.464	0.596	0.568	0.094	1.36	0.1	42
trans chlordane(gamma)	0.288	0.336	0.137	0.254	0.104	1.14	0.17	22
trans nonachlor	6.404	6.462	6.391	6.419	0.038	1.3	0.14	494
op DDE	2.066	2.049	1.951	2.022	0.062	0.336	0.044	602
pp DDE	4.100	3.906	3.903	3.969	0.113	4.15	0.38	96
op DDD	1.598	1.250	1.193	1.347	0.219	1.09	0.16	124
pp DDD	11.004	13.080	10.014	11.366	1.565	3.34	0.22	340
heptachlor	3.490	2.945	2.981	3.139	0.305	0.212	0.084	1480
oxychlordane	0.682	0.346	0.299	0.442	0.209	0.362	0.072	122
dieldrin	1.333	1.076	0.623	1.011	0.360	0.62	0.13	163
cis-nonachlor	4.023	3.241	3.344	3.536	0.425	0.64	0.16	552
op, DDT	0.511	0.690	0.474	0.559	0.115	0.894	0.057	62
pp, DDT	0.000	1.092	2.847	1.313	1.436	0.396	0.096	332

Table 8. Comparison between PCER and NIST for SRM 1946-Lake
Superior Fish Tissue

POLYCHLORINATED BIPHENYLS								
	1946	1946 dup	1946 trip	PCER average	PCER Std Dev	NIST value	NIST std. dev	% Recovery
	<i>trial a</i> <i>ng/g</i>	<i>trial b</i> <i>ng/g</i>	<i>trial c</i> <i>ng/g</i>					
PCB 18	0.974	0.532	1.152	0.886	0.319	0.84	0.11	105
PCB 31+28	3.482	2.528	5.113	3.708	1.307	3.46	0.44	107
PCB 44	4.270	3.797	3.906	3.991	0.248	4.66	0.86	86
PCB 49	2.741	2.695	2.598	2.678	0.073	3.8	0.39	70
PCB 52	5.879	5.129	5.261	5.423	0.401	8.1	1	67
PCB 63	4.688	4.541	4.517	4.582	0.092	1.28	0.19	358
PCB 66+95	10.012	11.704	8.904	10.207	1.410	22.2	3.2	46
PCB 74	5.475	4.759	4.560	4.932	0.481	4.83	0.51	102
PCB 77+110	26.751	22.964	25.445	25.053	1.924	23.127	2.025	108
PCB 99	21.895	19.761	21.580	21.079	1.152	25.6	2.3	82
PCB 101	22.455	20.643	21.073	21.390	0.947	34.6	2.6	62
PCB 107	7.339	6.558	7.004	6.967	0.392	8.86	0.2	79
PCB 118	28.850	26.803	28.645	28.099	1.128	52.1	1	54
PCB 128	25.982	14.961	23.138	21.361	5.722	22.8	1.9	94
PCB 132+153+105	202.832	192.991	196.085	197.303	5.033	195.73	10.66	101
PCB 146	27.141	25.239	25.945	26.108	0.961	30.1	3.5	87
PCB 149	22.670	21.270	21.867	21.935	0.702	26.3	1.3	83
PCB 158	11.603	9.813	10.151	10.522	0.951	7.66	0.88	137
PCB 163+138	136.436	125.983	132.687	131.702	5.295	146.8	13.8	90
PCB 174	8.815	8.098	8.424	8.446	0.359	9.3	1.3	91
PCB 180	77.889	73.472	78.097	76.486	2.612	74.4	4	103
PCB 183	24.658	21.926	23.581	23.388	1.376	21.9	2.5	107
PCB 193	11.593	11.841	12.066	11.834	0.237	5.78	0.72	205
PCB 194	13.145	11.850	12.969	12.654	0.702	13	1.3	97
PCB 201	25.511	22.622	23.891	24.008	1.448	2.83	0.13	848
PCB 206	8.461	7.400	7.740	7.867	0.542	5.4	0.43	146
PCB 209	0.873	0.708	0.856	0.813	0.091	1.3	0.21	63
						2		
						17	6	65

ORGANOCHLORINE PESTICIDES

	1946 <i>trial a</i>	1946 dup <i>trial b</i>	1946 trip <i>trial c</i>	PCER average	PCER Std Dev	NIST value	NIST std. dev	% Recovery
alpha BHC	6.118	5.260	6.716	6.031	0.732	5.72	0.65	105
lindane	1.121	2.445	1.231	1.599	0.735	1.14	0.18	140
Heptachlor Epoxide	12.346	11.694	11.895	11.978	0.334	5.5	0.23	218
Oxychlordane	16.775	17.965	18.638	17.793	0.944	18.9	1.5	94
alpha chlordane	24.744	24.029	25.012	24.595	0.508	32.5	1.8	76
trans chlordane(gamma)	8.957	8.591	8.674	8.741	0.192	8.36	0.91	105
cis nonachlor	8.636	8.852	8.295	8.594	0.280	59.1	3.6	15
trans nonachlor	91.557	91.393	90.813	91.255	0.391	99.6	7.6	92
pp DDE	492.851	470.093	487.500	483.481	11.899	373	48	130
op DDD	1.327	3.100	1.307	1.911	1.030	2.2	0.25	87
pp DDD	12.925	12.934	12.721	12.860	0.121	17.7	2.8	73
pp DDT	40.426	39.940	42.959	41.108	1.621	37.2	3.5	111
op, DDE	5.469	5.437	5.036	5.314	0.241	1.04	0.29	511
op, DDT	96.391	93.396	93.872	94.553	1.610	22.3	3.2	424

**Values highlighted
in blue denote
uncertified NIST
values

Table 9. Laboratory
QA Spiked Samples

<u>PCB Congeners</u>	<u>SPIKE A</u>	<u>SPIKE B</u>	<u>SPIKE C</u>	<u>Average</u>	<u>Std. Dev</u>	<u>Mullins Mixture</u>	<u>% Recovery</u>	<u>relative std. error</u>
	<i>ng</i>	<i>ng</i>	<i>ng</i>	<i>ng</i>		<i>ng</i>		<i>%</i>
1	22.179	23.486	24.734	23.466	1.278	43	55	-45
3	16.021	17.558	16.598	16.726	0.776	26	64	-36
4+10	1.324	1.425	1.402	1.384	0.053	2.8	49	-51
7	1.224	1.306	1.294	1.275	0.044	2.2	58	-42
6	2.355	2.5	2.526	2.460	0.092	4.2	59	-41
8+5	26.632	28.52	28.646	27.933	1.128	50	56	-44
19	0.581	0.588	0.589	0.586	0.004	1	59	-41
12+13	0.506	0.536	0.534	0.525	0.017	0.92	57	-43
18	7.054	7.502	7.554	7.370	0.275	13	57	-43
17	4.263	4.51	4.455	4.409	0.130	7.4	60	-40
24+27	0.343	0.376	0.352	0.357	0.017	0.87	41	-59
16+32	7.073	7.548	7.525	7.382	0.268	13.1	56	-44
29	0.013	0.0136	0.0136	0.013	0.000	0.18	7	-93
26	1.353	1.426	1.438	1.406	0.046	2.3	61	-39
25	0.421	0.432	0.427	0.427	0.006	1	43	-57
31+28	24.06	25.953	25.713	25.242	1.031	38	66	-34
53+33+21	9.711	10.292	10.278	10.094	0.331	16.7	60	-40
22	6.704	7.012	7.106	6.941	0.210	11	63	-37
45	1.513	1.606	1.586	1.568	0.049	2.7	58	-42
46	0.77	0.811	0.804	0.795	0.022	1.4	57	-43
52	6.681	7.08	7.016	6.926	0.214	12	58	-42
49	5.443	5.749	5.697	5.630	0.164	9	63	-37
47	3.025	3.341	3.369	3.245	0.191	5	65	-35
48	2.267	2.523	2.377	2.389	0.128	4	60	-40
44	9.245	9.828	9.788	9.620	0.326	15	64	-36
37+42	5.562	5.891	5.854	5.769	0.180	8.8	66	-34
41+71	11.898	12.65	12.557	12.368	0.410	9.4	132	32
40	1.957	2.076	2.054	2.029	0.063	3.3	61	-39
100	0.341	0.329	0.373	0.348	0.023	0.5	70	-30
63	0.502	0.523	0.511	0.512	0.011	0.74	69	-31
74	4.807	5.17	5.152	5.043	0.205	8.1	62	-38
70+76	13.458	14.461	14.364	14.094	0.553	21	67	-33
66+95	16.976	18.027	18.22	17.741	0.670	27.2	65	-35

91	0.876	0.943	0.918	0.912	0.034	1.4	65	-35
56+60	11.797	12.692	12.615	12.368	0.496	18	69	-31
101	2.895	3.13	3.106	3.044	0.129	4.8	63	-37
99	1.5	1.655	1.6	1.585	0.079	2.3	69	-31
83	0.229	0.256	0.256	0.247	0.016	0.36	69	-31
97	1.255	1.369	1.39	1.338	0.073	1.9	70	-30
Mullins Mixture						relative std. error		
PCB Congeners	SPIKE A	SPIKE B	SPIKE C	Average	Std. Dev	"610"	% Recovery	%
	<i>ng</i>	<i>ng</i>	<i>ng</i>	<i>ng</i>		<i>ng</i>		
87+81	0.958	1.008	1.025	0.997	0.035	3.32	30	-70
85	1.357	1.435	1.543	1.445	0.093	2.1	69	-31
136	0.826	0.87	0.912	0.869	0.043	1.4	62	-38
77+110	4.57	4.931	4.951	4.817	0.214	7.1	68	-32
82	0.815	0.868	0.849	0.844	0.027	1.3	65	-35
151	3.449	3.724	3.655	3.609	0.143	5.7	63	-37
135+144	1.322	1.426	1.395	1.381	0.053	2.2	63	-37
107	0.228	0.229	0.222	0.226	0.004	0.33	69	-31
149	6.603	6.814	6.827	6.748	0.126	11	61	-39
118	2.202	2.138	2.426	2.255	0.151	3.5	64	-36
131	0.0436	0.0422	0.0464	0.044	0.002	0.091	48	-52
146	0.983	0.983	1.042	1.003	0.034	1.6	63	-37
153+132+105	13.268	13.688	14.011	13.656	0.373	21.6	63	-37
141	3.051	3.113	3.229	3.131	0.090	5.2	60	-40
137+176	0.844	0.882	0.908	0.878	0.032	1.388	63	-37
163+138	6.413	6.738	6.839	6.663	0.223	9.8	68	-32
158	0.338	0.349	0.352	0.346	0.007	1.2	29	-71
129+178	2.109	2.156	2.124	2.130	0.024	3.7	58	-42
187+182	10.847	11.376	11.529	11.251	0.358	15	75	-25
183	4.634	4.86	4.898	4.797	0.143	7.7	62	-38
128	0.255	0.294	0.311	0.287	0.029	0.47	61	-39
185	1.345	1.431	1.446	1.407	0.055	2.2	64	-36
174	6.802	7.171	7.284	7.086	0.252	11	64	-36
177	3.524	3.694	3.74	3.653	0.114	5.7	64	-36
202+171	2.392	2.505	2.557	2.485	0.084	3.69	67	-33
157+200	1.315	1.447	1.372	1.378	0.066	2.067	67	-33
172+197	4.389	4.602	4.502	4.498	0.107	2.14	210	110
180	21.398	22.83	23.052	22.427	0.898	24	93	-7
193	3.776	4.094	4.177	4.016	0.212	2.4	167	67
191	0.309	0.321	0.405	0.345	0.052	0.45	77	-23
199	0.448	0.477	0.48	0.468	0.018	1	47	-53

170+190	7.882	8.356	8.475	8.238	0.314	12.1	68	-32
201	9.437	9.971	10.114	9.841	0.357	15	66	-34
203+196	10.746	11.417	11.607	11.257	0.452	17	66	-34
189	0.224	0.24	0.276	0.247	0.027	0.48	51	-49
208+195	4.891	5.232	5.312	5.145	0.224	8.0776	64	-36
207	0.276	0.295	0.3	0.290	0.013	0.48	60	-40
194	4.46	4.798	4.823	4.694	0.203	6.9	68	-32
205	0.234	0.248	0.261	0.248	0.014	0.4	62	-38
206	2.769	2.938	2.979	2.895	0.111	4.2	69	-31
209	0.0173	0.0171	0.0159	0.017	0.001	0.095	18	-82